DEPARTMENT OF ENVIRONMENTAL QUALITY
KATHLEEN BABINEAUX BLANCO
GOVERNOR
MIKE D. McDANIEL, Ph.D.
SECRETARY

CERTIFIED MAIL 70041160000037939802

Mr. Richard Boudreau
Syngenta Crop Protection, Inc.
P.O. Box 11
St. Gabriel, LA 70776

RE: Syngenta Crop Protection, Inc
AI# 2367/ PER 20060029
LAD 053 783 445
Request for Variance from Secondary Containment Volume and Impermeable Coating Requirements (LAC 33:V.1907.G) for Tanks 4609-F and 4604-F1

Dear Mr. Boudreau:

The Waste Permits Division is in receipt of your submittal dated December 14, 2006, requesting a variance from the secondary containment volume and impermeable coating requirements (LAC 33:V.1907.G) for tanks 4609-F and 4604-F1. According to the information submitted, you are requesting the variance from secondary containment volume because the waste stored in the tank 4609-F (the larger tank) is a solid and only 12% of the volume of tank would be released during a catastrophic failure. The variance from the impermeable coating requirements is being requested because the waste stored in the tanks is a solid and poses little threat of migration.

Tank 4609-F is the larger of the two tanks and has a permitted capacity of 34,500 gallons. Due to the physical characteristics of the dewatered filter cake stored in the tank (solids only) and in the event of a catastrophic failure of the tank, only 12% of the volume would be released into the secondary containment. The entire volume of the tank would not be released as like a liquid waste. The secondary containment volume of 19,040 gallons is sufficient to contain the 25 yr/24 hr rainfall and at least 12% of the volume of tank 4609-F.

The physical and chemical characteristics of the waste contained in tanks 4609-F and 4604-F1 are such that the waste poses little threat of migration neither to the groundwater nor to human health and the environment.

After careful review and consideration of your submittal, the Waste Permits Division hereby issues a draft approval for the variance from secondary containment volume and impermeable coating requirements for tanks 4609-F and 4604-F1, pending a thirty (30) day public comment period. The public comment period will begin April 5, 2007, and end on May 8, 2007. A final decision will be issued after the receipt of all comments and after a public hearing (if one is deemed necessary).

ENVIRONMENTAL **SERVICES**
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This approval is for the lifetime of tanks 4609-F and 4604-F1, provided the service of the tanks does not change. If the service of the tanks changes, Syngenta will be required to either request a new variance or increase the secondary containment volume and place an impermeable coating on the concrete of the secondary containment.

Please reference your Agency Interest Number 2367, EPA Identification Number LAD 053 783 445, and Permit Activity Number PER 20060029 on all future correspondence pertaining to this issue. If you have any questions, please contact Ms. Amy Exnicios or Ms. Shannon Pusateri of the Waste Permits Division at (225) 219-0029 and (225) 219-3453, respectively.

Sincerely,

Chuck Carr Brown, PhD
Assistant Secretary

ale

c: Shannon Pusateri- Waste Permits Division- Engineering Group 2

Syngenta Crop Protection, Inc Tel. 225 642 1100
Post Office Box 11
St. Gabriel, LA 70776

COPY

PER20060029

original to IOHW

copy to HW/G2/Williams
AVG

syngenta

December 14, 2006

Certified Mail:7005 0390 0003 3356 4358

RECEIVED
DEC 21 2006
WATER & WASTE PERMITS DIVISION
SOLID & HAZARDOUS WASTE SECTION

2007 DEC 20 PM 2:0
DEQ - OES

Chuck Carr Brown, Ph.D.
Assistant Secretary
Louisiana Department of Environmental Quality
Office of Environmental Services
P.O. Box 4313
Baton Rouge, Louisiana 70821-4313

Re: Syngenta Crop Protection, Inc.-St. Gabriel Plant (Syngenta) Request For Variance From Secondary Containment Volume and Impermeable Coating Requirements of LAC 33:V.1907.E.1 for Permitted Hazardous Waste Tanks 4604-F1 and 4609-F in Accordance with LAC 33:V.1907.G

LAD053783445-RN-OP-1 AI #2367 PER20060005

Dear Dr. Brown:

This is a request for a variance from the regulations in LAC 33:V.1907.E.1.a and b. for secondary containment external liner coating and volume requirements according to the format specified in LAC 33:V.1907.G.1 for the secondary containment of Syngenta tanks 4604-F1 and 4609-F.

Background

Syngenta legacy company, Ciba-Geigy was permitted to construct an on-site Multi-purpose Incinerator system at the Syngenta-St. Gabriel Plant in 1990. The facility was constructed in 1993 and LDEQ issued the final hazardous waste operating permit (LAD053783445-MO-1) in 1996. Ciba-Geigy-St. Gabriel Plant came under the ownership of Novartis Crop Protection, Inc. in 1997. Syngenta was formed in 2001 by the merger of Novartis Crop Protection, Inc. and Zeneca Ag Products, Inc. and became the owner of the St. Gabriel Plant. LDEQ renewed the former Novartis HW Operating Permit, under Syngenta ownership, in March 2005.

Tank 4609-F is a silo tank that accumulates Syngenta non-hazardous dewatered filter press solids from the plant wastewater treatment unit for screw conveyor extraction and feeding to the rotary kiln incinerator. Tank 4604-F1 is a Dump Hopper that collects the dewatered wastewater treatment solids from a dump truck ramp and feeds the solids by a screw extraction and conveyor system to the silo tank, 4609-F. Both tanks are in the same concrete containment area.

Syngenta received from the Louisiana Department of Environmental Quality-Office of Environmental Services, Waste Permits Division (LDEQ) a Notice of Deficiency letter dated September 20, 2006 on the submittal of tank recertification reports for permitted tanks 4609-F and 4604-F1. The tank assessment recertification reports were submitted as a requirement of the permit renewal. Syngenta responded to the comments in a letter dated October 27, 2006.

A full copy of the responses are provided in Appendix A.

In comment #6 of the LDEQ letter, LDEQ noted the following:

Section V.A.1.b. of the operating permit indicates that Syngenta must design, construct and maintain secondary containment for all hazardous waste tanks in accordance with LAC 33:V.1907. Syngenta has indicated that the containment area for tanks 4604-F1 & 4609-F was designed with containment capacity sufficient for a 25-year rainfall and 12% of Tank 4609-F which has a storage capacity of 176 yd^3 (4752 ft^3). In accordance with the referenced regulation, the containment system must be designed or operated to contain 100 percent of the capacity of the largest tank within its boundary. This regulation does not differentiate between liquid or solid capacity. Thus, Syngenta must address the lack of sufficient containment area as required by this regulation or request a variance from secondary containment as provided under LAC 33:V.1907.G.

Syngenta responded with the following as included in pages 7 and 8 of the response dated October 27, 2006 (See copy in Appendix A):
The secondary containment calculations provided with the Hazardous Waste Tank Assessment and Certification for 4604-F1 and 4609-F, submitted to LDEQ on April 13, 2006 are calculations developed by the independent, registered, professional engineer (Mr. Thomas Poole, P.E) who assessed and certified the tank integrity according to the Syngenta RCRA permit (LAD053783445-RN-OP-1) requirement II.E.23.a, that stipulates submittal of a tank assessment according to LAC 33:V.1903.B. The cited permit requirement and the cited regulation in Section 1903 do not include a requirement for certification or recertification of the secondary containment. The calculations provided in the certification document submitted in April 2006 are merely a check of the containment volume, and are not intended for use in recertifying the secondary containment system. The secondary containment for this tank system was already certified by another independent, registered professional engineer (F.J.M. Engineers-Mr. Oren Furnish, P.E.) April 14, 1993 and May 11, 1993. LDEQ approved the construction certification package in correspondence dated June 3, 1993, including the tank and containment systems for 4604-F1 (formerly 4610-L), 4609-F, 4619-F, and 4620-F, performed by F.J.M Engineers, Inc. as constructed according to permit and regulation requirements. The June 3, 1993 LDEQ approval from Scott Guilliams, Quentin Cannatella, and Glenn Miller also provided approval to place these units in hazardous waste service as soon as trial burn data was approved.

Neither LAC 33: V. 1903 nor LAC 33: V.1905 require certification or recertification of the secondary containment in accordance with LAC 33:V.1907, so the recertification of the secondary containment was beyond the scope of the tank assessment required in the permit renewal language in LAD053783445-RN-OP-1 section II.E.23.a for an "updated tank certification report for the existing tanks in Table 4 in accordance with LAC 33:V.1903.B".

Nevertheless, as provided above, in the April 2006 tank assessment report, the certifying engineer has verified the original certification of compliance of 1993 of the system, as designed, including the secondary containment for 4604-F1 and 4609-F. Mr. Thomas Poole, P.E. , an independent, registered P.E. provides a rationale in the April 2006 certification, using the waste physical properties, to demonstrate that if tank 4609-F, the largest tank in the containment, were to have catastrophic failure, no greater than 12% of the volume of the tank would be occupied by the waste in the containment area below the tank, and this volume plus the volume of a 25-yr rainfall would be contained. This was done to verify the original 1993 certification and not to recertify the secondary containment. The containment would hold 100% of the volume of the waste released into the containment and a 25-yr rainfall if a full tank of the material was released. The regulations, in LAC 33:V.1907.E.1.a, assume that the entire volume of waste in any tank would flow into the containment, if there were a catastrophic failure. In this case that is not correct. Syngenta should not be penalized for a false assumption in the rulemaking.

Additionally, Tanks 4604-F1 and 4609-F are used almost exclusively for non-hazardous waste. Tank 4604-F1, formerly 4610-L (replaced in 1995), serves as a dump hopper to collect dump trucks of on-site generated, non-hazardous wastewater treatment dewatered filter cake. The hopper augers and conveys the filter cake in an enclosed conveyor Filter Cake or Sludge Silo, 4609-F. The Filter Cake Silo, 4609-F stores and drops the filter cake to an enclosed conveyor and into the rotary kiln. Only rarely (less than 0.05% of the time in the last five years of service of these tanks) is this waste classified as mixture rule hazardous waste that is not characteristically hazardous. The reason for the rare hazardous classification is due to <500 ppm levels of toluene in the filter cake from specific, rare, toluene spill events to the wastewater treatment unit. The fact that the waste handled by these tanks would be non-hazardous ≥99.95 % of the time was part of the knowledge used by the certifying engineers, over the years to certify the secondary containment as adequate for this service.

Since two different professional engineers and the LDEQ staff in 1993 have approved this system as designed, since the material managed in this system is almost always non-hazardous waste, and because Syngenta has provided engineering calculations that the containment meets the requirements of containing 100% of any possible release from the largest tank in the containment plus a 25-yr rainfall, Syngenta believes that requiring Syngenta to obtain a variance from LAC 33:V.1907.E.1.a and b in accordance with LAC 33: 1907.G is redundant.

Syngenta intends to meet all the regulatory and permit requirements as specified in the regulations that are cited immediately below for the containment area surrounding Syngenta Tanks 4609-F and 4604-F1:

LAC 33:V.1907.E.
In addition to requirements of Subsections B-D the secondary containment systems must satisfy the following requirements:

1. *External Liner systems must be:*

   a. *designed or operated to contain 100 percent of the capacity of the largest tank within its boundary;*

   b. *designed or operated to prevent run on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run on or infiltration. Such additional capacity must be sufficient to contain a 25-year, 24-hour rainfall event.*

This same secondary containment is not coated as EPA requires in its clarification of requirements for concrete liners in secondary containment systems issued in the September 2, 1988 Federal Register, FR 53, No. 171. p. 340814. See copy in Appendix B.

Syngenta Request for Variance from LAC 33:V.1907.E.1.a and b and Impermeable Coating Requirement Using Equivalent Protection of the Groundwater and Surface Water as per LAC 33:V.1907.G.1

LAC 33:V.1907
G. The owner or operator may obtain a variance from the requirements of this section
1. In deciding whether to grant a variance based on a demonstration of equivalent protection of the groundwater and surface water the administrative authority will consider:
   a. the nature and quantity of the wastes
   Response:
   Syngenta managed 1023 tons of total waste in these tanks and containment system in 2004. Of this quantity 996 tons were non-hazardous dewatered waste triazine recovery solids and biological treatment dewatered solids from the facility wastewater treatment (WWT) plant. A copy of the waste profile is included in Appendix C. The remainder of the waste in 2004 that was managed in these tanks was similar dewatered solids from the same source, but hazardous by the mixture rule containing <500 ppm toluene (F005) from a toluene spill to the WWT Unit. The hazardous portion managed in these tanks in 2004 represented only 0.03% of the waste managed in this system in 2004. In 2005 Syngenta managed 573 tons of the same non-hazardous dewatered waste triazine recovery solids and biological treatment dewatered solids. No hazardous waste was managed in these tanks in 2005. Additionally as noted in the above excerpt from the Syngenta NOD response to the LDEQ comment #6, dated October 27, 2006, over the last five years these tanks in this containment system have been used for >99.95% non-hazardous solid waste. The <0.05 % hazardous solid waste, managed in these tanks over the last five years, has been the solids from the same source, but were classified as F005 listed hazardous waste, due to the mixture rule, and contaminated with <500 ppm toluene from inadvertent spills to the WWT unit that temporarily exceeded the headworks exemption for short periods of time. Syngenta has a plant environmental procedure for managing WWT residues during a temporary exceedance of the headworks exemption due to a spill exceeding the concentration limits specified in the headworks exemption rule.

b. the proposed alternate design and operation;

Response:

The design capacity of the largest tank (4609-F) in the containment of concern is 35,545 gallons (176 yd^3). The permitted capacity is 34,500 gallons. The tank is operated, typically, at less than half full, or < 17, 773 gallons of solids to ensure that aging of the solids is minimized. The tank is strapped to determine the solids level periodically, as needed. The net capacity of the containment system after subtracting equipment displacement volume is 19,040 gallons as provided in the revised calculations in Appendix D. The volume of a 10.1 inch, 25-yr, 24-hr rainfall in this containment would be 12,343 gallons. Available containment for waste from the largest tank system in the containment is 6,695 gallons. Design drawings of the containment area are also provided in Appendix D.

As described, the largest tank, 4609-F, contains dewatered filter cake solids 100% of the time the tank is in use. The physical characteristics of this material will not allow a complete tank evacuation of the material if a catastrophic failure of the tank occurs. Laboratory physical testing of the material has shown that a catastrophic failure of the tank and spill of the contents would result in a pile of the material below the tank with an angle of repose of 33°. The entire contents of the tank would not "pour" out as with a liquid. The volume of the containment area that would be consumed by a pile of these solids under the tank with an angle of repose of about 33°, would be 4,265 gallons or approximately 24% of the volume operating capacity of the tank, according to the calculations performed by the independent professional engineer that completed the most recent assessment report. Regardless, of the amount of the spill, the spilled material would be removed and cleaned immediately according to the site environmental release procedures. Since the available containment volume above a 25-yr rainfall is 6,695 gallons, from a practical standpoint, the total containment volume of 19,040 gallons is sufficient to contain a 25-yr rainfall of 12,343 gallons plus the maximum waste release quantity that would consume 4,265 gallons of containment with 2,432 gallons in excess of that volume. The net containment volume is not great enough to contain the tank permitted capacity of 34,500 gallons and a 25-yr rainfall, however, the solids will not pour our like a liquid. Syngenta has demonstrated for the waste, typically stored in the tank system, a catastrophic tank failure would not release to the containment 100% of the capacity of the tank, but no greater than 4,265 gallons of consumed containment volume. Additionally, the waste is virtually always non-hazardous solid waste.

The secondary containment system for this area consists of a reinforced concrete containment floor and 1'-0" high walls and a 6'-0" x 6'-0" x 6'-0" reinforced concrete sump with double walls and leak detection piping. All joints in the concrete are protected with water stop material and joint sealant.

The containment system was designed in accordance with the American Concrete Institute Report ACI 350R – Environmental Engineering of Concrete Structures.

Syngenta provides further description of the alternate design and use of the tank system in Appendix D. This is corrected and revised information, prepared by the independent registered professional engineer and originally submitted to LDEQ in April 2006 with the tank assessment and certification report for these two tanks. This information constitutes a revision of section 7.0 of the tank assessment and certification report.

EPA published a clarification of the coating requirements for secondary containment in the September 2, 1988 Federal Register, Vol. 53, No.171, p 34084. EPA states in that publication "Given the relative permeability of concrete, the Agency believes that most secondary containment concrete structures, vaults or otherwise, will require an impermeable coating or lining that will prevent migration of waste into the concrete as specified in 40CFR 264.193.(e) (2) (iv)..... External liner systems must be provided with an impermeable interior coating that is compatible with the stored waste and that will prevent migration of the waste into the concrete."

Syngenta believes that no additional coating of the concrete is necessary and the waste physical, and chemical composition, and its classification, combined with the containment alternative design,operating practices, and the location characteristics pose minimum threat of migration of hazardous waste or hazardous constituents to the groundwater, and no substantial present or future hazard will be posed to the human health or the environment from continued use of this designed secondary containment.

c. the hydrogeologic setting of the facility, including the thickness of the soils present between the tank system and the groundwater.

Response:
The hydrogeologic framework has not changed from that submitted in the initial permit application by the Syngenta legacy company, Ciba-Geigy, in sections 517.T.1-3 of the February 1989 submittal. An except from part of that submittal in the form of part of a geotechnical report by Geraghty & Miller is included in Appendix E.

d. all other factors that would influence the quality and mobility of the hazardous constituents and the potential for them to migrate to the groundwater or surface water.

Response:
No hazardous constituents have a significant potential to migrate to the groundwater under the current containment design for the following reasons:

- **the waste to be contained by the secondary containment is a non-hazardous solid 99.95% of the time.**

- **the only hazardous constituent defined that would be present in the waste would be toluene at a concentration of <500 ppm, but typically <50 ppm.**
- **any low level of toluene impregnated in the waste would not be extractable by rainwater.**
- **operating procedures require the immediate removal and packaging of spills, even catastrophic releases.**
- **the secondary containment system for this area consists of a reinforced concrete containment floor and 1'-0" high walls and a 6'-0" x 6'-0" x 6'-0" reinforced concrete sump with double walls and leak detection piping.**
- **all joints in the concrete are protected with water stop material and joint sealant.**
- **the waste, typically managed in this system, is a solid, non-hazardous waste.**
- **rainwater collected in this area would not leach hazardous constituents with any significant risk.**
- **the concrete containment is impermeable to solid waste.**

Syngenta requests a variance from the regulations in LAC 33:V.1907.E.1.a and b. for secondary containment external liner systems for any additional coating and volume requirements based on this demonstration. Please place a high priority on a response to this request so Syngneta can resolve this issue.

If you have any questions please contact Richard Boudreau of my staff at 225-642-1257.

Sincerely,

Ralph Caddell
Site Manager

cc: Ms. Amy Exnicios-LDEQ, Office Environmental Services, Permits Section
Mr. Tom Harris- Administrator, LDEQ-Environmental Technology Division
Mr. Donelson Caffery- LDEQ-Environmental Technology Division

Syngenta Crop Protection, Inc Tel. 225 642 1100
Post Office Box 11
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syngenta

October 27, 2006

Certified Mail:7005 0390 0003 3356 4297

Chuck Carr Brown, Ph.D
Assistant Secretary
Louisiana Department of Environmental Quality
Office of Environmental Services
P.O. Box 4313
Baton Rouge, Louisiana 70821-4313

Re: Syngenta Crop Protection, Inc.-St. Gabriel Plant (Syngenta) Responses to Hazardous Waste Tank Certification NOD Letter of September 20, 2006
LAD053783445-RN-OP-1 AI #2367

Dear Dr. Brown:

Enclosed are five (5) bound copies of the Syngenta responses to the LDEQ September 20, 2006 NOD letter for a review of Hazardous Waste Tank Assessment and Certification submittal on for tanks 4402-F, 4403-FB, 4404-F1, and 4609-F performed by an independent, registered professional engineer.

Based on these responses Syngenta requests approval of these Hazardous Waste Tank assessments and certifications.

If you have any questions please contact me at 225-642-1257.

Sincerely,

Richard B. Boudreau

Richard B. Boudreau
Sr. Staff Environmental Engineer

cc: Ms. Amy Exnicios-LDEQ, Office Environmental Services, Permits Section- w/o enclosure

DEPARTMENT OF ENVIRONMENTAL QUALITY
KATHLEEN BABINEAUX BLANCO
GOVERNOR
MIKE D. McDANIEL, Ph.D.
SECRETARY

SEP 20 2006

CERTIFIED MAIL 7004 1160 0001 9949 6847

Mr. Richard Boudreau
Syngenta Crop Protection, Inc.
P.O. Box 11
St. Gabriel, LA 70776

RE: Syngenta Crop Protection, Inc.
Comments to Tank Assessment for Tanks 4402-F, 4403-FB, 4604-F1, & 4609-F
AI# 2367/ PER 20060005
LAD 053 783 445

Dear Mr. Boudreau:

The Waste Permits Division is in receipt of your submittal dated July 18, 2006 of the response to deficiencies on tank assessments for Tanks 4402-F, 4403-FB, 4604-F1, and 4609-F. The Waste Permits Division has completed the technical review of the response to tank assessments deficiencies for 4402-F, 4403-FB, 4604-F1, and 4609-F and has determined it to be deficient. The deficiencies are outlined in Attachment 1.

Syngenta must submit five (5) bound copies of its responses to the deficiencies to the Waste Permits Division within thirty (30) days of receipt of this letter. The response must be submitted as a bound, stand-alone document. The preferred format for the responses is to list each deficiency in regular typeface followed immediately by your narrative response in bold typeface. Each narrative response must reference the section and page number in the original submittal that the response addresses. Any supplemental information, such as tables or figures, should be included as an attachment or appendix in the document.

Failure to respond to these deficiencies may subject the facility to possible enforcement actions provided by the Louisiana Environmental Quality Act, La. R.S.30:2001 et seq., particularly Section 2025(C)(3).

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Please reference your Agency Interest Number 2367, EPA Identification Number LAD 053 783 445, and Permit Activity Number PER 20060005 on all future correspondence pertaining to this issue. If you have any question concerning this issue, please contact Ms. Amy Exnicios or Shannon Pusateri of the Waste Permits Division at (225) 219-0029 and (225) 219-3453.

Sincerely,

Bijan Sharafkhani
Administrator
Waste Permits Division

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Attachment

c: Shannon Pusateri- Waste Permits Division- Engineering Group 2

Syngenta Crop Protection, Inc.
LAD 053 783 445; AI 2367
Tank Certification Review
Tanks 4402-F, 4403-FB, 4604-F1, and 4609-F
Attachment 1

Tank 4402-F

LAC 33:V.1907.E.1	Facility must provide additional information regarding the second tank in the containment area: Is it in hazardous waste service? If so, what are the dimensions of the tank?
	The secondary containment calculations provided must take into account the volume displaced by the concrete pads of both tanks in the containment area. As well, the diagram provided showing the layout of the containment area foundation is not readable. Facility must provide a clear diagram for verification of calculations.

Tank 4403-FB

LAC 33:V.1907.B	Syngenta must provide information on the Barcol hardness testing and standards it applied when inspecting the FRP tanks.
LAD 053 783 445-RN-OP-1 V.A.2.c.(7)	Section V.A.2.c.(7) of Syngenta's operating permit indicates that all FRP tanks should be inspected for fiberglass exposure, cracks, softening, swelling and delamination. The out-of-service checklist used for external and internal inspections of Syngenta's FRP tanks is derived from API code 653 which is specific to metal tanks. While this checklist requires inspection for very general defects in the tanks (i.e., leaks, pitting, corrosion, etc.), it does not specifically address other defects (i.e., detection of voids within the matrix, surface shrinkage, geometric distortion, etc.) associated with FRP tanks. Syngenta must demonstrate that all FRP tanks were examined for these and other potential defects.
4403-FB LAC 33:V.1907.B	Section 3 of all FRP tanks assessments indicates that the applicable design code used for the design of these tanks was NBS-PS 15-69: Custom Contact-Molded Reinforced-Polyester Chemical Resistant Process Equipment. However, this standard was withdrawn from general use January 20, 1982 by the National Bureau of Standards (now the National Institute of Standards and Technology). Syngenta's records indicate that all FRP tanks were constructed and placed in service after this date (i.e., 1989 or later). Thus, use of this design code is inappropriate for ensuring the structural integrity and chemical compatibility of the FRP tanks in question. Syngenta must demonstrate that the FRP tanks were sufficiently designed to meet an design active code as of the date the individual tank was designed.

Tank 4609-F

LAC 33:V.1903.B.5 The ultrasonic thickness testing results provided for tank 4609-F do not appear to be complete. Points A05-A09, A14-A20, B04-B20, C04-C20 and D04-D20 all show thickness results of 0.000 inches. Facility must explain the reason these results are 0.000 inches (i.e., were no results taken at this points; was there an error in reading the results, etc.). If an error occurred in recording the data at these points, provide an updated report with the missing data.

Tanks 4604-F1 & 4609-F

LAC 33:V.1907.E.1 The secondary containment calculations provided for tanks 4604F-1 & 4609-F must take into account the volume displaced by the concrete support pads of all tanks and equipment tanks in the containment area. The calculations provided do not take into consideration these concrete pads (as indicated on diagram 46-DC-071). Please update the calculations to show these displacements.

Section V.A.1.b. of the operating permit indicates that Syngenta must design, construct and maintain secondary containment for all hazardous waste tanks in accordance with LAC 33:V.1907. Syngenta has indicated that the containment area for tanks 4604-F1 & 4609-F was designed with containment capacity sufficient for a 25-year rainfall and 12% of Tank 4609-F which has a storage capacity of 176 yd^3 (4752 ft^3). In accordance with the referenced regulation, the containment system must be designed or operated to contain 100 percent of the capacity of the largest tank within its boundary. This regulation does not differentiate between liquid or solid capacity. Thus, Syngenta must address the lack of sufficient containment area as required by this regulation or request a variance from secondary containment as provided under LAC 33:V.1907.G.

syngenta

SYNGENTA RESPONSES
LDEQ NOD LETTER OF SEPTEMBER 20, 2006

Tank No. 4402-F

LDEQ Comment # 1:

LAC 33:V. 1907.E.1
Facility must provide additional information regarding the second tank in the containment area: Is it in hazardous waste service? If so, what are the dimensions of the tank?

The secondary containment calculations provided must take into account the volume displaced by the concrete pads of both tanks in the containment area. As well, the diagram provided showing the layout of the containment area foundation is not readable. Facility must provide a clear diagram for verification of calculations.

Syngenta Response:
The other tank that shares the secondary containment system with 4402-F is 4404-F. Tank 4402-F has a permitted capacity of 18,500 gallons. Tank 4404-F has a permitted capacity of 16,000 gallons. Both tanks are for storage of organic waste. Appendix A contains is a copy of "TABLE 5 – EXISTING TANKS" from Syngenta's permit which provides the requested information. The table also indicates built or service date. Corrected built or service dates are provided. The original table 4 in the permit had incorrect built or service dates for the tanks noted. Tank 4402-F was originally placed into service in 1974. An independent firm, CK and Associates (Mr. Rich Major, P.E.) performed two hazardous waste tank and secondary containment assessments for Tank 4402-F according to sections 1903 and 1907 of the regulations. The certifications were completed in 1989 and 1990 in compliance with the November 1987 promulgated tank regulations for existing tanks. Ciba-Geigy provided a copy of the March 1989 certification report to LDEQ in the 1989 Hazardous Waste Permit Application and completed the items specified in the report for the secondary containment to meet the requirements. Syngenta replaced Tank 4402-F in December 2002. Another independent firm, Poole Engineers (Mr. Thomas Poole, P.E.), performed the certification for the replacement tank assessment in December 2002 according to Section 1905 of the regulations, and Syngenta submitted the certification report to LDEQ-Office of Compliance on December 12, 2002 within seven days of placing the tank back into service.

LDEQ hazardous waste inspectors cited Syngenta in May 2004 for failing to maintain the external liner and failed to ensure that the lined volume of the containment had sufficient capacity per LAC 33:.1907. After corrective action that

cost Syngenta over $50,000, including verifying the containment capacity, LDEQ Office of Compliance issued a letter of corrected violation on November 12, 2004.

Revised secondary containment calculations are provided in Appendix B that include displacement of any objects in containment. The design and construction of the secondary containment system for this area is based on storage of the volume of the largest tank, 4402-F, plus a 25 year, 24 hour rainfall event, and take into account the volume displaced by the concrete pads of both tanks and the volume displaced by other items in the containment area. The calculation shows that the secondary containment meets the volume requirements of Section 1907 regulations.

Also included in Appendix B is a better copy of drawing 44-DH-009, EFFLUENT TANKAGE FOUNDATION PLAN SECTIONS & DETAILS.

The secondary containment calculations provided with the Hazardous Waste Tank Assessment and Certification for 4402-F, submitted to LDEQ on April 13, 2006 are calculations developed by the independent, registered, professional engineer (Mr. Thomas Poole, P.E. who assessed and certified the tank integrity according to the Syngneta RCRA permit (LAD053783445-RN-OP-1) requirement II.E.23.a, that stipulates submittal of a tank assessment according to LAC 33:V.1903.B. The cited permit requirement and the cited regulation in section 1903 do not include a requirement for certification or recertification of the secondary containment. The calculations provided in the certification document submitted in April 2006 are merely a check of the containment volume, and are not intended for use in recertifying the secondary containment system. The secondary containment for this tank system was already certified by another independent, registered professional engineer in 1989 and 1990 as described above, thoroughly reviewed by LDEQ inspectors in 2004, and approved by the Office of Compliance on November 12, 2004. Neither LAC 33: V. 1903 nor LAC 33: V.1905 require certification or recertification of the secondary containment in accordance with LAC 33: V.1907, so the recertification of the secondary containment was beyond the scope of the tank assessment required by the permit language in LAD053783445-RN-OP-1 section II.E.23.a for an "updated tank certification report for the existing tanks in Table 4 in accordance with LAC 33:V.1903.B.

Nevertheless, as provided above, the LDEQ has already twice documented that the secondary containment is in compliance and Mr. Thomas Poole, P.E. , an independent, registered P.E. verifies the containment meets the volume, construction, and coating requirements of LAC 33: V. 1907.A-F. in the April 2006 submittal and herein.

Tank No. 4403-FB

LDEQ Comment # 2:

LAC 33:V.1907.B
Syngenta must provide information on the Barcol hardness testing and standards it applied when inspecting the FRP tanks.

Syngenta Response:
The regulation cited above in the LDEQ September 20, 2006 NOD letter, LAC 33:V.1907.B, is an error. Section 1907 refers to secondary containment. Hardness testing deals with tank integrity rather than secondary containment. Regulation LAC 33:V.1903.B should be the correct reference to assessment of tank integrity.

For inspection of FRP tanks, Syngenta uses an inspection guideline checklist, "TANK OUT OF SERVICE INSPECTION CHECKLIST", which Syngenta developed from API 653 by the American Petroleum Institute for steel tanks. For FRP tank inspection, this checklist is used in combination with Barcol hardness testing of the interior surfaces, performed in accordance with ASTM D-2583 Barcol Hardness Test. Readings from the hardness tests are compared to material manufacturer's Barcol Hardness guidelines for determination of service condition of inner surface, and to Syngenta's "GUIDELINES FOR FURAN TANK TESTING", a copy of which is provided in Appendix C.

For background information, Tanks 4403-FA (steel construction), FB, FC, FD, FE and FG (FRP construction) are 1989 and 1993 replacement tanks for interim status tank 4403-F, taken out of service in 1988. Tank 4403-F, which had a capacity of 214, 000 gallons, was placed in service in 1975 and operated until 1988 as an interim status tank. It was closed in 1988 and replaced with FA (steel) in 1989, three FRP tanks, FB, FC, FD in 1989, and two FRP tanks, FE and FG, in 1993. Certifications of the 4403-FA,FB,FC, and FD tanks and their secondary containment were submitted in 1989 and certifications for tank assessment were submitted for the additional two tanks 1993. Four additional tanks, 4403-FF, FH, FJ, and FK are permitted as future replacement tanks for the closed interim status tank. Tank 4403-FG underwent major repair in July 2001. Certification of major repair was submitted to LDEQ in August 2001. Tank 4403-FE was relined and certification of major repair was submitted to LDEQ in July 2002. Tank 4403-FA was replaced with an in-kind replacement in August 2006 and the tank assessment certification for the replacement tank was submitted in September 2006 under the permit renewal specific condition requirement to assess the tanks and certify meeting Section 1903.B requirements.

LDEO Comment # 3:

LAD 053 783 445-RN-OP-1 V.A.2.C.(7)
Section V.A.2.C.(7) of Syngenta's operating permit indicates that all FRP tanks should be inspected for fiberglass exposure, cracks, softening, swelling and delamination. The out-of-service checklist used for external and internal inspections of Syngenta's FRP tanks is derived from API code 653 which is specific to metal tanks. While this checklist requires inspection for very general defects in the tanks (i.e., leaks, pitting, corrosion, etc.) it does not specifically address other defects (i.e., detection of voids within the matrix, surface shrinkage, geometric distortion, etc.) associated with FRP tanks. Syngenta must demonstrate that all FRP Tanks were examined for these and other potential defects.

Syngenta Response:
For inspection of FRP tanks, Syngenta has used a very detailed inspection which was developed from API 653 by the American Petroleum Institute for steel atmospheric tanks. The inspections have included items listed in a checklist, "TANK OUT OF SERVICE INSPECTION CHECKLIST". For FRP tanks this inspection has traditionally included the items listed in the Permit Section V.A.2.c.(7), even though the "guideline" checklist used may not have specified the specific conditions listed in the cited permit section. This checklist has traditionally been used in combination with Barcol hardness testing of the interior surfaces, performed in accordance with ASTM D-2583 Barcol Hardness Test. Readings from the hardness tests are compared to material manufacturer's Barcol Hardness guidelines for determination of service condition of inner surface, and to Syngenta's "GUIDELINES FOR FURAN TANK TESTING". Copy provided in Appendix C.

Mechanical integrity inspection was performed on this tank on March 16, 2006 and a copy of the original inspection guideline checklist and Barcol hardness readings are included in Section 3 of the tank certification document. The mechanical integrity inspection for tank 4403-FB was a very detailed inspections for integrity of FRP materials, and of tank elements including the shell, heads, nozzles, nozzle connections, stiffeners, tank support lugs, support structure, etc.

In order to improve documentation of the FRP tank inspections, Syngenta has revised its inspection guideline checklist for FRP tanks to include specific reference for FRP tank inspection and listing of specific items specified in the permit for FRP tanks. Syngenta's mechanical integrity group has completed and signed the newly revised "TANK OUT OF SERVICE INSPECTION CHECKLIST" for tank 4403-FB, and a copy of the revised checklist for the inspection performed on March 16, 2006 is provided in Appendix D. Copies of the revised, completed checklists for other FRP tanks being assessed and certified will be kept in the certification report documents.

LDEQ Comment # 4:

LAC 33:V.1907.B

Section 3 of all FRP tanks assessments indicates that the applicable design code used for the design of these tanks was NBS-PS 15-69: Custom Contact-Molded Reinforced-Polyester Chemical Resistant Process Equipment. However, this standard was withdrawn from general use January 20, 1982 by the National Bureau of Standards (now the National Institute of Standards and Technology). Syngenta's records indicate that all FRP tanks were constructed and placed in service after this date (i.e., 1989 or later). Thus, use of this design code is inappropriate for ensuring the structural integrity and chemical compatibility of the FRP tanks in question. Syngenta must demonstrate that the FRP tanks were sufficiently designed to meet a design active code as of the date the individual tank was designed.

Syngenta Response:

The specific statement in LDEQ's comment above that the voluntary standard NBS-PS 15-69 "was withdrawn from general use" by the National Bureau of Standards is not correct. The standard was withdrawn but there is no reference from the National Institute of Standards and Technology (NIST) stating that is was taken from 'general use' and it is still a document made available by the NIST. Syngenta Engineering made verbal contact with the NIST and an NIST representative informed Syngenta that withdrawal means that the NIST no longer administers the standard. According to the NIST representative, the reason for the withdrawal was because the American Society for Testing and Materials (ASTM) issued four standards that were redundant to NBS-PS 15-69. The standard is still available from the NIST on their web site under "Frequently Requested Standards". The information contained in NBS-PS 15-69 is still technically sound and is widely used by the fiberglass tank fabrication industry for contact-molded glass-fiber-reinforced tanks.

Four ASTM standards were used to replace PS15-69 and these are specifically called out (referenced) by the NIST on the coversheet of the withdrawn document:

- **ASTM D2996, Specification for Filament-Wound Reinforced Thermosetting Resin Pipe.**
- **ASTM D3299, Filament-Wound Glass-Fiber-Reinforced Thermoset Resin Chemical-Resistant Tanks.**
- **ASTM D4021, Glass Fiber-Reinforced Polyester Underground Petroleum Storage Tanks**
- **ASTM D4097, Contact-Molded Glass-Fiber-Reinforced Thermoset Resin Chemical-Resistant Tanks.**

Of these standards, introduced in 1982, ASTM D4097 aligns with NBS PS 15-69 and applies directly to the design basis of the fiberglass storage tank. Therefore, the fiberglass tanks in question were designed and constructed in accordance with appropriate industry accepted standards and fabrication practices that were not only relevant and in use in 1982, but also 1989 up to present day.

Tank No. 4609-F

LDEQ Comment # 5:

LAC 33:V.1903.B.5
The ultrasonic thickness testing results provided for tank 4609-F do no appear to be complete. Points A05-A09, A14-A20, B04-B20, C04-C20 and D04-D20 all show thickness results of 0.000 inches. Facility must explain the reason these results are 0.000 inches (i.e., were no results taken at this points; was there an error in reading the results, etc.). If an error occurred in recording the data at these points, provide an updated report with the missing data.

Syngenta Response:
The Panametric "D-meter" will give a reading of zero when no reading is taken at a pre-defined point. The points identified in the above comment were not measured due to inaccessibility. The print out recorded zero for those unmeasured results. The report duplicated the instrument readings even when no measurement is made.

Tank Nos. 4604-F1 & 4609-F

LDEQ Comment # 6:

LAC 33:V. 1907.E.1
The secondary containment calculations provided for tanks 4604-F1 & 4609-F must take into account the volume displaced by the concrete support pads of all tanks and equipment tanks in the containment area. The calculations provided do not take into consideration these concrete pads (as indicated on diagram 46-DC-071). Please update the calculations to show these displacements.

Section V.A.1.b. of the operating permit indicates that Syngenta must design, construct and maintain secondary containment for all hazardous waste tanks in accordance with LAC 33:V.1907. Syngenta has indicated that the containment area for tanks 4604-F1 & 4609-F was designed with containment capacity sufficient for a 25-year rainfall and 12% of Tank 4609-F which has a storage capacity of 176 yd^3 (4752 ft^3). In accordance with the referenced regulation, the containment system must be designed or operated to contain 100 percent of the capacity of the largest tank within its boundary. This regulation does not differentiate between liquid or solid capacity. Thus, Syngenta must address the lack of sufficient containment area as required by this regulation or request a variance from secondary containment as provided under LAC 33:V.1907.G.

Syngenta Response:
The secondary containment calculations provided with the Hazardous Waste Tank Assessment and Certification for 4604-F1 and 4609-F, submitted to LDEQ on April 13, 2006 are calculations developed by the independent, registered, professional engineer (Mr. Thomas Poole, P.E) who assessed and certified the tank integrity according to the Syngneta RCRA permit (LAD053783445-RN-OP-1) requirement II.E.23.a, that stipulates submittal of a tank assessment according to LAC 33:V.1903.B. The cited permit requirement and the cited regulation in Section 1903 do not include a requirement for certification or recertification of the secondary containment. The calculations provided in the certification document submitted in April 2006 are merely a check of the containment volume, and are not intended for use in recertifying the secondary containment system. The secondary containment for this tank system was already certified by another independent, registered professional engineer (F.J.M. Engineers-Mr. Oren Furnish, P.E.) April 14, 1993 and May 11, 1993. LDEQ approved the construction certification package in correspondence dated June 3, 1993, including the tank and containment systems for 4604-F1 (formerly 4610-L), 4609-F, 4619-F, and 4620-F, performed by F.J.M Engineers, Inc. as constructed according to permit and regulation requirements. The June 3, 1993 LDEQ approval from Scott Guilliams, Quentin Cannatella, and Glenn Miller also provided approval to place these units in hazardous waste service as soon as trial burn data was approved.
Neither LAC 33: V. 1903 nor LAC 33: V.1905 require certification or recertification of the secondary containment in accordance with LAC 33:V.1907, so the

recertification of the secondary containment was beyond the scope of the tank assessment required in the permit renewal language in LAD053783445-RN-OP-1 section II.E.23.a for an "updated tank certification report for the existing tanks in Table 4 in accordance with LAC 33:V.1903.B".

Nevertheless, as provided above, in the April 2006 tank assessment report, the certifying engineer has verified the original certification of compliance of 1993 of the system, as designed, including the secondary containment for 4604-F1 and 4609-F. Mr. Thomas Poole, P.E., an independent, registered P.E. provides a rationale in the April 2006 certification, using the waste physical properties, to demonstrate that if tank 4609-F, the largest tank in the containment, were to have catastrophic failure, no greater than 12% of the volume of the tank would be occupied by the waste in the containment area below the tank, and this volume plus the volume of a 25-yr rainfall would be contained. This was done to verify the original 1993 certification and not to recertify the secondary containment. The containment would hold 100% of the volume of the waste released into the containment and a 25-yr rainfall if a full tank of the material was released. The regulations, in LAC 33:V.1907.E.1.a, assume that the entire volume of waste in any tank would flow into the containment, if there were a catastrophic failure. In this case that is not correct. Syngenta should not be penalized for a false assumption in the rulemaking.

Additionally, tanks 4604-F1 and 4609-F are used almost exclusively for non-hazardous waste. Tank 4604-F1, formerly 4610-L (replaced in 1995), serves as a dump hopper to collect dump trucks of on-site generated, non-hazardous wastewater treatment dewatered filter cake. The hopper augers and conveys the filter cake in an enclosed conveyor Filter Cake or Sludge Silo, 4609-F. The Filter Cake Silo, 4609-F stores and drops the filter cake to an enclosed conveyor and into the rotary kiln. Only rarely (less than 0.05% of the time in the last five years of service of these tanks) is this waste classified as mixture rule hazardous waste that is not characteristically hazardous. The reason for the rare hazardous classification is due to <500 ppm levels of toluene in the filter cake from specific, rare, toluene spill events to the wastewater treatment unit. The fact that the waste handled by these tanks would be non-hazardous ≥99.95 % of the time was part of the knowledge used by the certifying engineers, over the years to certify the secondary containment as adequate for this service.

Since two different professional engineers and the LDEQ staff in 1993 have approved this system as designed, since the material managed in this system is almost always non-hazardous waste, and because Syngenta has provided engineering calculations that the containment meets the requirements of containing 100% of any possible release from the largest tank in the containment plus a 25-yr rainfall, Syngenta believes that requiring Syngenta to obtain a variance from LAC 33:V.1907.E.1.a and b in accordance with LAC 33: 1907.G is redundant.

Nevertheless, if the LDEQ staff does not concur on this issue, Syngenta will apply for a variance from the volume containment requirements in LA 33:V.1907.E in

accordance with LAC 33:1907.G within 30 days of an LDEQ verbal or written response to this correspondence concerning this issue.

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TANK SYSTEM PROFESSIONAL ENGINEER'S CERTIFICATION

Based on the data compiled and presented in this response to LDEQ Notice of Deficiencies, dated September 20, 2006, the testing and inspections completed, and review of the piping and instrument diagram, it has been determined that the facilities described in this report were constructed in accordance with the applicable Louisiana Hazardous Waste Regulations. The tanks 4402-F, 4403-FB, 4604-F1 and 4609-F are not leaking and are fit for use and has been provided with adequate secondary containment as required by LAC Title 33, Part V, Subpart 1, Chapter 19.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, and those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Thomas Poole, P. E.
Printed Name of Registered Professional Engineer

Signature of Registered Professional Engineer Date 10/30/06

Professional Seal

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APPENDIX A

TABLE 5 – EXISTING TANKS

TABLE 5
EXISTING TANKS

TANK	SERVICE	DIMENSIONS (DI X HT)	MAXIMUM PERMITTED CAPACITY (GALLONS)	YEAR BUILT OR PLACED INTO SERVICE
4402-F	Organic Waste	12.5' X 20.5'	18,500 Gallons	2002
4403-FA	Aqueous Waste	14' X 19'	24,370 Gallons	~~1989~~ 2006
4403-FB	Aqueous Waste	14' X 19'	23,060 Gallons	1989
4403-FC	Aqueous Waste	14' X 19'	23,060 Gallons	1989
4403-FD	Aqueous Waste	14' X 19'	23,060 Gallons	1989
4403-FE	Organic Waste	14' X 19'	24,300 Gallons	~~1990~~ 1993
4403-FG	Aqueous/Organic Waste	14' X 19'	24,300 Gallons	~~1990~~ 1993
4404-F	Organic Waste	14' X 16'	16,000 Gallons	1987
4604-F1	Bulk (solid/sludge)	9'10"X13'X5'8"	3,000 Gallons	1995
4609-F	Sludge Waste	12.5' X 39'	34,500 Gallons	1993
4619-F	*Hydro-Recirculation	8' X 11'	3,500 Gallons	~~1997~~ 1998
4620-F	*Entrainment Separator/Flue Gas Residuals	8' X 11'	3,500 Gallons	~~1997~~ 1998

Corrected 10/25/06 NAB

*Ancillary equipment - These operations are considered physical treatment under LAC 33:V.1521. They exist as components of identified tank systems and are subject to the appropriate requirements of LAC 33:V.Chapter 19.

TABLE 6
TANK DESIGN FOR PROPOSED TANKS

TANK	DESIGN CODE	MATERIALS OF CONSTRUCTION	NOMINAL BUILT WALL THICKNESS (INCHES)	MINIMUM PERMITTED WALL THICKNESS (INCHES)*	LININGS
4403-FF	ASME Sec. VIII	C.S	0.375	0.25	None
4403-FH	NBS-PS-1569	FRP	1.115 BTM 0.475 TOP	N/A	None
4403-FJ	ASME Sec. VIII	C.S	0.375	0.25	None
4403-FK	NBS-PS-1569	FRP	1.115 BTM 0.475 TOP	N/A	None
4606-FA	API-620	C.S	0.375	0.25	None
4606-FB	ASME	FRP	2.4375 BTM 1.25 TOP	N/A	None
4607-FA	API-620	C.S	0.375	0.25	None
4607-FB	ASME	FRP	2.4375 BTM 1.25 TOP	N/A	None

* – For inspection standard refer to Section V.A.2.c.(4) of this permit

V.A.2. Tank Maintenance, Inspection, and Testing

V.A.2.a. The Permittee shall maintain the permitted tank systems according to the design code specified for each tank as listed in Table 4 and Table 6 and not exceed the listed operating conditions.

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APPENDIX B

SECONDARY CONTAINMENT VOLUME CALCULATIONS FOR 4402-F

DRAWING 44-DH-009 **EFFLUENT TANKAGE FOUNDATON PLAN SECTIONS & DETAILS**

9/26/06 2ndary Containment Calcs. 06-024-101
Tanks 4402-F & 4404-F JD

Tank 4402-F Capacity = 18,500 gallons — Largest Tank
Tank 4404-F Capacity = 16,000 gallons

Depth of Containment Area

Ave. Height of Containment Wall = $(33" + 33\frac{1}{2}" + 36\frac{1}{2}" + 37\frac{1}{4}")/4 = 35.0"$
(Measured by T. Poole)

25 yr., 24-hour rainfall event = 10.1" rain

Available Containment Depth = 35" − 10.1" = 24.9"

Volume

Gross Area = 48.5' × 29.0' = 1406.5 sf
Gross Volume = 1406.5 sf × $24.9"/12$ = 2918.5 cf

Volume Displaced

Concrete Tank Pedestal 4402-F: Pedestal (measured) is ≈ 3" above floor.
Volume Displaced = $[(18.5' * 18.5') - (4)(\frac{1}{2})(5.42' * 5.42')] * 0.25'$ = 70.87 cf
($18.5' * 18.5' = 342.25$)

Concrete Tank Pedestal 4404-F: Pedestal is ≈ 3" above floor
Volume Displaced = $[(17.5' * 17.5') - (4)(\frac{1}{2})(5.125' * 5.125') + (2)(1.5')(7.25')] * 0.25'$ = 68.87 cf
($17.5' * 17.5' = 306.25$; $(4)(\frac{1}{2})(5.125' * 5.125') = 52.53$; $(2)(1.5')(7.25') = 21.75$)

Tank 4404-F Depth of Tank Included = 24.9" − 3" = 21.9"
Volume Displaced = $(\pi)(14.0')^2(0.25)(1.625')$ = 280.94 cf

(2) Stair & Ladder Landing Pads: Very close to elevation of floor

Total Vol. Displaced = 420.68 cf

Available Volume for Storage of Spilled Liquids =
2918.5 cf − 420.68 cf = 2497.8 cf
× 7.48052 g/cf

Available Volume 18,685 gallons

d. After repairs are made to the Core Test areas the tank shall be hydrostatically tested. The test should be witnessed and approved by a Certified Professional Engineer.

Test Results

Results of tests will be reviewed by the Area Maintenance Engineer and an experienced contractor in furan tank repairs for development of a repair scope.

APPENDIX D

Newly revised "TANK OUT OF SERVICE INSPECTION CHECKLIST" for tank 4403-FB, completed and signed by Syngenta's mechanical integrity group.

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FRP TANK OUT OF SERVICE INSPECTION CHECKLIST

F/L Number 4403-FB

OVERVIEW		
:heck that tank has been readied by production, blinded and tagged by all responsible ies. Obtain Vessel Entry Permit, and follow all entry procedures.	x	Ok
:heck for trapped product in plugged equipment or appurtenances, ledges, etc.	x	Ok
ıspect for slipping hazards on tank floor.	x	Ok
:heck surfaces needing inspection for a heavy-scale or product build-up. Note areas ding more cleaning.	x	Ok
Item	Completed	Comments
FOUNDATION		
isually inspect foundation for settlement, erosion, cracking and general deterioration oncrete.	x	Ok
ıcrete Ring		
ıspect drain openings in ring, back of waterdraw basins and top surface of ring for cation of bottom leakage.	NA	
ıspect for cavities under foundation and vegetation against bottom of tank.	NA	
:heck that runoff rainwater from the shell drains away from tank.	NA	
:heck for settlement around perimeter of tank.	NA	
ıhalt		
:heck for settling of tank into asphalt base which would direct runoff rain water under tank instead of away from it.	NA	
k for areas where leaching of product has left rock filler exposed, which indicates leakage.	NA	
ainage		
:heck site for drainage away from the tank and associated piping and manifolds.	NA	
:heck condition of the dike drains.	NA	
ısekeeping		
ıspect the area for build-up of trash, vegetation, and other inflammables build-up.	x	Ok
SHELLS		
ernal Visual Inspection		
/isually inspect for blistering, distortion, cracking and signs of delaminating (possible elling) or leaks.	NA	
nspect the bottom-to-foundation seal, if any.	NA	
ıspect tank grounding strap and components, if any.	NA	
ıspect insulation for breaks and cracks, look for wet insulation.	NA	
SHELL APPURTENANCES		
nways and Nozzles		
nspect for signs of cracks, delaminating (possible swelling) or leakage on joints at zles, manways, and reinforcing pads.	x	Ok
nspect for shell distortion around nozzles, caused by excessive pipe deflection.	x	Ok
nspect for flange leaks around bolting.	x	Ok
nspect sealing of insulation around manways and nozzles.	NA	
:heck for inadequate manway flange and nozzle blind thickness.	x	Ok

FRP TANK OUT OF SERVICE INSPECTION CHECK LIST -Continued Item	Completed	comments
[redacted]ng Manifolds		
spect manifold piping, flanges, and valves for leaks.	x	Ok
heck sample connections for leaks	NA	
l-Mounted Sample Station		
spect sample lines and valves for leakage, including drain or return-to-tank line.	NA	
spect bracing and supports for sample lines and equipment.	NA	
TANK ROOFS		
[redacted]Plate		
sually inspect for blistering, distortion, cracking and signs of delaminating (possible ling) or leaks.	x	Ok
ok for indications of standing water, proper runoff,	NA	
spect insulation for cracks or leaks, inspect for proper water runoff.	NA	
ROOF APPURTENANCES		
ways and Nozzles		
spect for signs of cracks, delaminating (possible swelling) or leakage on joints at les, manways, and reinforcing pads.	x	Ok
spect for roof distortion around nozzles, caused by excessive pipe deflection.	x	Ok
spect for flange leaks around bolting.	x	Ok
spect sealing of insulation around manways and nozzles.	NA	
heck for inadequate manway flange and nozzle blind thickness.	x	Ok
ospheric and Conservation Vents		
[redacted]k condition of the vent and screens	x	Ok
t vensts for signs of leakage,coatings and safety straps, if any.	x	Ok
TANK BOTTOM		
te		
isually inspect for blistering, distortion, cracking and signs of delaminating (possible lling) or leaks.	x	Ok
TANK BOTTOM APPURTENANCES		
nways and Nozzles		
nspect for signs of cracks, delaminating (possible swelling) or leakage on joints at zles, manways, and reinforcing pads.	x	Ok
nspect bottom head for distortion around nozzles, caused by excessive pipe lection.	x	Ok
nspect for flange leaks around bolting.	x	Ok
nspect sealing of insulation around manways and nozzles.	NA	
Check for inadequate manway flange and nozzle blind thickness.	x	Ok
ACCESS STRUCTURES		
ndrails		
nspect for pitting and holes, paint failure.	x	Ok
nspect attachment welds.	x	Ok
dentify cold joints and sharp edges. Inspect the handrails and midrails.	x	Ok
nspect safety drop bar (or safety chain) for corrosion, functioning, and length.	NA	
[redacted]		
m Frame		
nspect frame for corrosion and paint failure.	x	Ok
Inspect the attachment of frame to supports and supports to tank for corrosion and ld failure.	x	Ok
Check that flat-surface to flat-surface junctures reseal welded.	x	Ok

FRP TANK OUT OF SERVICE INSPECTION CHECK LIST -Continued Item	Completed	comments
and Grating		
deck plate for corrosion-caused thinning or holes (not drain holes) and paint	x	Ok
pect plate-to-frame weld for rust scale build-up.	x	Ok
pect grating for corrosion-caused thinning of bars and failure of welds.	x	Ok
eck grating tie down clips. Where grating has been retrofitted to replace plate, ure the rise of the step below and above the grating surface and compare with other on the stairway.	x	Ok
way Stringers		
spect spiral stairway stringers for corrosion, paint failure, and weld failure. Inspect hment of stairway trends to stringer.	x	Ok
spect stairway supports to shell welds and reinforcing pads.	x	Ok
spect steel support attachment to concrete base for corrosion.	x	Ok
d Ladders		
ect for corrosion, cracking, bending, loosness, surface wear, condition of welds and ngs:	x	Ok
nchor points of ladders	x	Ok
nchor points of cages	x	Ok
bolts and fastners	x	Ok
eld areas of rungs and supports	x	Ok
ungs and hand rails	x	Ok
try guards	x	Ok
External Barcol Hardness Examination		
n a Barcol hardness examination of shell and heads, attach data to this report.	NA	
r Barcol readings less than 5 refer to "Syngenta Guideline for Furan Tank Testing".	NA	
INTERNAL INSPECTION		
SHELLS		
rnal Visual Wall Inspection		
isually inspect for blistering, distortion (possible swelling), cracking and signs of minating or discolorization.	x	Ok
ways and Nozzles		
nspect for signs of cracks, delaminating (possible swelling or leakage on joints at zles, manways, and reinforcing pads.	x	Ok
nspect for shell distortion around nozzles, caused by excessive pipe deflection.	NA	
TANK ROOF		
Head		
isually inspect for blistering, distortion, cracking and signs of delaminating (possible lling) or dicolorization	x	Ok
nways and Nozzles		
nspect for signs of cracks, delaminating (possible swelling) or leakage on joints at zles, manways, and reinforcing pads.	x	Ok
nect for roof distortion around nozzles, caused by excessive pipe deflection.	NA	

FRP TANK OUT OF SERVICE INSPECTION CHECK LIST -Continued		
Item	Completed	comments
TANK BOTTOM		
e / Bottom Head		
sually inspect for blistering, distortion, cracking and signs of delaminating (possible ling) or dicolorization.	x	Note 1
spect for floor for distortion around nozzles, caused by excessive pipe deflection.	x	Ok
ways and Nozzles		
spect for signs of cracks, delaminating (possible swelling) or leakage on joints at les, manways, and reinforcing pads.	x	Ok
spect bottom head for distortion around nozzles, caused by excessive pipe ection.	NA	
Internal Barcol Hardness Examination		
erform a Barcol hardness examination of the floor, roof, shell and all nozzles.	x	Ok
erform detailed hardness examination of all suspect areas found during visual ection.	x	Ok
or barcol readings less than 5 refer to " Sygenta Guideline for Furan Tank Testing".	x	Ok
ecord all suspect areas with digital camera.	x	Note 1
ttach all data and inspection isometrics to this report.	x	Ok
INSPECTORS COMMENTS		
e 1 - There was a couple of small buldges on the bottom head on the Northwest side. tures were taken of the area.		
commended for continued service: x Out of service until repairs:		
pect as per schedule: x Recommended next inspection date:		
pection Work Order: 90419214		
ation Number For Repairs:		
tor: L Oricno Date: 3/16\06		

FRP TANK OUT-OF-SERVICE INSPECTION CHECKLIST-Continued

Comments:

ommended for continued service: ✓ Out of service until repairs: ____

ect as per schedule: ✓ Recommended next inspection date: ____

AME: Steve Bowers Date: 10/13/06

For Rene Thibodeaux

DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL ASSESSMENT

ENVIRONMENTAL TECHNOLOGY DIVISION
POST OFFICE BOX 4314
BATON ROUGE, LOUISIANA 70821-4314
PHONE: (225) 219-3406
FAX: (225) 219-3474

DEQ
LOUISIANA

FAX TRANSMITTAL SHEET

DATE: 12/7/2006 TIME: _____

TO: Richard Boudreau FAX#: (225) 282-1156

FIRM OR DEPARTMENT: Syngenta

ADDRESS: _____

ORIGINATOR: Don Caffery PHONE #: (225) 219-3450

PERSON TO CONTACT IF THERE IS A PROBLEM: _____

NUMBER OF PAGES (INCLUDING COVER): 11

COMMENTS: Richard -

Here is a copy of the Final Rule giving interpretations of portions of the hazardous waste tank regulations.

Have a blessed Christmas

Don Caffery

74:26 is given with the understanding that the State will revise as necessary its regulations to comply with Federal requirements after the decision in the *NRDC* v. *Thomas* remand is made. Today's action approves revisions to the existing NSR program.

EPA finds good cause exists for making the action taken in this notice immediately effective because the implementation plan revisions are already in effect under State law or regulation. EPA's approval poses no additional regulatory burden.

Under 5 U.S.C. 605(b), I certify that this *SIP revision will not have a* significant economic impact on a substantial number of small entities. (See 46 FR 8709.)

Under section 307(b)(1) of the Clean Air Act, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by November 1, 1988. This action may not be challenged later in proceedings to enforce its requirements. (see 307(b)(2).)

The Office of Management and Budget has exempted this rule from the requirements of section 3 of Executive Order 12291.

List of Subjects in 40 CFR Part 52

Air pollution control, Particulate matter, Sulfur oxides, Incorporation by reference.

Note: Incorporation by reference of the State Implementation Plan for the State of South Dakota was approved by the Director of the Federal Register on July 1, 1982.

Date: August 18, 1988.

Lee M. Thomas,

Administrator.

Part 52 Chapter I, Title 40 of the *Code of Federal Regulations* is amended as follows:

PART 52—[AMENDED]

Subpart QQ—South Dakota

1. The authority citation for Part 52 continues to read as follows:

Authority: 42 U.S.C. 7401–7642.

2. Section 52.2170 is amended by adding paragraph (c)(11) to read as follows:

§ 52.2170 Identification of plan.

* * * * *

(c) * * *

(11) On January 28, 1986, the Governor submitted a plan revision (1) updating citations to Federal regulations in the South Dakota air pollution control regulations (Administrative Rules of South Dakota 74:26), (2) adopting new ambient air quality standards for particulates (PM_{10}), (3) revising the State administrative procedures for handling permit hearings and contested cases, and (4) correcting deficiencies in the stack height regulations.

(i) Incorporation by reference

(A) Revisions to the Administrative Rules of South Dakota (ARSD) 74:26:01:12, ARSD 74:26:01:35, ARSD 74:26:01:37, ARSD 74:26:01:54, ARSD 74:26:06 through ARSD 74:26:23, inclusive, and addition of a new section, ARSD 74:26:02:35, were revised through November 24, 1987.

3. Add a new § 52.2180.

§ 52.2180 Stack height regulations.

The State of South Dakota has committed to revise its stack height regulations should EPA complete rulemaking to respond to the decision in *NRDC* v. *Thomas*, 838 F.2d 1224 (DC Cir. 1988). In a letter to Douglas M. Skie, EPA, dated May 11, 1988, Joel C. Smith, *Administrator*, Office of Air Quality and Solid Waste, stated:

"* * * We are submitting this letter to allow EPA to continue to process our current SIP submittal with the understanding that if EPA's response to the NRDC remand modifies the July 8, 1985 regulations, EPA will notify the State of the rules that must be changed to comport with the EPA's modified requirements. The State of South Dakota agrees to make the appropriate changes."

[FR Doc. 88-19165 Filed 9-1-88; 8:45 am]

BILLING CODE 6560-50-M

[FRL 3436-7]

40 CFR Parts 260, 264, 265, and 270

Hazardous Waste Management System; Standards for Hazardous Waste Storage and Treatment Tank Systems

AGENCY: U.S. Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: The U.S. Environmental Protection Agency (EPA) is today providing an interpretation of certain terms and provisions, and correcting typographical and other errors, that originally appeared in the revised final standards for hazardous waste tank systems (51 FR 25422, July 14, 1986). These interpretations and amendments are being made in response to litigation and numerous inquiries that the Agency has received on certain aspects of the final rule.

EFFECTIVE DATE: September 2, 1988.

FOR FURTHER INFORMATION CONTACT: The RCRA/Superfund Hotline, (800) 424-9346 (in Washington, DC, call (202) 382-3000)), or William J. Kline, (202) 382-7917, Office of Solid Waste (OS-322), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460.

SUPPLEMENTARY INFORMATION:

Table of Contents

I. Background

On July 14, 1986, EPA issued a final rule that revised the standards for hazardous waste storage and treatment tank systems (51 FR 25422). Since then, the Agency has received requests for interpretation of a number of terms or provisions of the final rule, and has found several typographical errors in the rule. In addition, the revised tank system standards were challenged by industry petitioners in *Edison Electric Institute (EEI), et al.* v. *U.S. EPA*, No. 86-1549 (D.C. Circuit). This notice provides additional interpretation and clarification of the final rule, both in response to public inquiry and in *settlement of the EEI litigation*. This notice also corrects a number of typographical errors.

II. Discussion of Issues Requiring Interpretation

Three major areas of the final rule require further clarification: (1) The exemptions for wastewater treatment systems and elementary neutralization tank systems, (2) issues concerning secondary containment requirements, and (3) the applicability of the immediate response exemption under 40 CFR 265.1(c)(11) and 270.1(c)(3).

A. Scope of the Exemptions for Wastewater Treatment/Elementary Neutralization Tank Systems

1. Effect of Revised Tank System Standards on Wastewater Treatment/Elementary Neutralization Units

On November 17, 1980, EPA promulgated an amendment to the hazardous waste standards that suspended applicability of the requirements in 40 CFR Parts 122 (now codified in Part 270), 264, and 265 to owners and operators of wastewater treatment tanks and elementary neutralization tanks (45 FR 76074).

In the July 14, 1986, revised standards for hazardous waste tank systems (51 FR 25422), the Agency, in response to evidence indicating a high incidence of failures in piping and other equipment ancillary to tanks, made a special effort to focus on the proper management of such equipment. Thus, all equipment that is ancillary to the tank and used "to distribute, meter, or control the flow of hazardous waste from its point of generation to a storage or treatment tank(s), between hazardous waste storage and treatment tanks to a point of disposal on-site, or to a point of shipment for disposal off-site" was made subject to the revised standards (see definition of "ancillary equipment", 40 CFR 260.10). EPA used the term "tank system" to emphasize that both the tank and its ancillary equipment must be managed in accordance with the revised standards. EPA has received several inquiries regarding the extent to which the term "tank system" might result in previously exempt wastewater treatment/neutralization tanks being regulated by the revised hazardous waste tank system standards.

In the July 14, 1986, rulemaking, the Agency had no intention of altering the scope of the November 17, 1980, exemption for such units as provided under 40 CFR 264.1(g)(6), 265.1(c)(10), and 270.1(c)(2)(v) by subjecting the ancillary equipment of such exempt tanks to regulation. EPA attempted to make this point clear in the preamble of the revised standards (see 51 FR 25462). However, numerous parties believe the preamble language is still ambiguous. This ambiguity was also an issue in the *EEI* litigation. To add to the confusion of the status of these exemptions, EPA inadvertently neglected to amend the 40 CFR 260.10 definitions of "elementary neutralization unit" and "wastewater treatment unit" to reflect the Agency's intent to address hazardous waste tank systems, rather than simply hazardous waste tanks. In this notice, EPA corrects this oversight.

In order to remove any remaining ambiguity over this issue, EPA is today amending the wastewater treatment and elementary neutralization unit definitions to clarify that the exemptions apply to the tank systems, not just the tank. The only additional equipment intended to be covered under the revised standards was ancillary equipment that is associated with a regulated hazardous waste storage or treatment tank.

Thus, if a wastewater treatment or elementary neutralization unit is not subject to the RCRA Subtitle C hazardous waste management standards, the ancillary equipment connected to the exempted unit is likewise not subject to the Subtitle C standards. Similarly, the exemptions apply to sumps that meet the definition of a tank in 40 CFR 260.10 and that are used for the purpose of conveying hazardous wastewater to an exempted wastewater treatment or elementary neutralization unit (including conveyance by way of intermediate sumps, tanks, and holding ponds) since such sumps are ancillary equipment to the exempted tanks. Also, the revised hazardous waste tank system standards do not apply to ancillary equipment that is associated with hazardous waste management units other than storage or treatment tanks (e.g., surface impoundments).

2. Clarification of "Wastewater Treatment Unit"

One of the conditions under 40 CFR 260.10 for qualifying as a wastewater treatment unit is that the unit must be part of a wastewater treatment facility that is subject to regulation under either section 402 or section 307(b) of the Clean Water Act. EPA has received numerous inquiries regarding the meaning of the term "wastewater treatment facility."

Based on EPA's property-boundary interpretation of the term "facility" under RCRA and the purpose of the exemption, which is to exclude tank systems subject to regulation under the Clean Water Act, it is EPA's position that in order for a wastewater treatment unit to be covered by the exemption, it must be part of an on-site wastewater treatment facility. Accordingly, any hazardous waste tank system that is used to store or treat the wastewater that is managed at an on-site wastewater treatment facility with an National Pollution Discharge Elimination System (NPDES) permit or that discharges to a Publicly Owned Treatment Works (POTW), is exempt from the RCRA regulations. Whether the wastewater is conveyed from the tank system directly to the treatment unit or indirectly by way of intermediate sumps, tanks or holding ponds does not affect the applicability of the exemption. For example, this exemption would apply if a sump is used to collect the rinse from periodic cleaning of utility boilers and this wastewater is then conveyed to a wastewater treatment unit at the same facility. Also, the means of conveyance of the waste between storage and treatment does not affect the applicability of this exemption. The applicability of the exemption does not depend on whether the wastewater is piped or trucked, or conveyed in any other manner to the wastewater treatment facility within the boundaries of the facility generating the wastewater. Likewise, the applicability of the exemption does not depend on whether the on-site wastewater treatment facility also treats wastewater generated off-site.

However, any tank system that was employed in managing wastewater at a facility prior to its off-site transfer to another location, whether or not the off-site location includes an NPDES permitted wastewater treatment facility, or a facility that discharges to a POTW sewer system, is not covered by this exemption.

EPA intends that this exemption apply to any tank system that manages hazardous wastewater and is dedicated for use with an on-site wastewater treatment facility. However, if a tank system, in addition to being used in conjunction with an on-site wastewater treatment facility, is used on a routine or occasional basis to store or treat a hazardous wastewater prior to shipment off-site for treatment, storage, or disposal, it is not covered by this exemption. Unless the tank system otherwise qualifies for some other exemption, it would be subject to the revised standards for hazardous waste tank systems.

A final clarification of this exemption concerns an on-site wastewater treatment facility that has no discharge to surface water. As previously stated in 45 FR 76078 (November 17, 1980), the wastewater treatment unit exemption is intended to cover only tank systems that are part of a wastewater treatment facility that (1) produces a treated wastewater effluent which is discharged into surface waters or into a POTW sewer system and therefore is subject to the NPDES or pretreatment requirements of the Clean Water Act, or (2) produces no treated wastewater effluent as a direct result of such requirements. This exemption is not intended to apply to wastewater

treatment units that are not required to obtain an NPDES permit because they do not discharge treated effluent.

B. Issues Regarding Secondary Containment Requirements

The Agency has also received numerous requests for interpretation of the regulatory provisions concerning the secondary containment requirements. The areas of confusion include: the meaning of welded flanges, the exemption for certain types of joints and connections, the exemption of above-ground sealless valves, the extent of required leak detection for concrete liners, and the secondary containment of pressurized piping with automatic shut-off devices.

1. Welded Flanges

The primary purpose of a flange is to enable connection of piping to vessels, pumps, valves, and other equipment. A flange connection provides an easy means of removing equipment from the pipe system for inspection, maintenance, repair, or replacement. Like other piping connections, flanges can be joined to piping by two basic techniques: threaded joints or metallurgical bonds (e.g., welds). If a piece of equipment is connected to piping by a threaded joint, it may be difficult to remove the equipment without disassembly of a portion of the piping system or without loosening other pipe-threaded connections. If the equipment is welded to the pipe, the pipe must be cut to remove the equipment. In contrast, equipment joined together with flanged connections can be easily removed by unbolting the flanges.

In §§ 264.193(f) and 265.193(f) of the revised hazardous waste tank system standards, EPA exempted welded flanges from the requirement to have secondary containment as long as the flanges were visually inspected on a daily basis. Numerous questions have been raised as to the intended meaning of the term "welded flange" because EPA did not define this term in the July 14, 1986, final rules. Apparently, several different meanings can be attributed to the term.

A term typically used in national piping codes, "welded flange" refers to welding only the piping to the flange. The flange-to-flange seal is achieved by mechanical seals, such as gaskets and o-rings. The flanges are usually held together by bolts. For a perfect seal, the bolt holes would have to be eliminated, and a circumferential weld made at the flange-to-flange joint. However, EPA is not aware of any national standards or codes that discuss this type of weld. And, most important, such a weld would defeat the purpose of the flange—i.e., to allow easy coupling and uncoupling of equipment from the piping system.

In exempting welded flanges from secondary containment, EPA intended to discourage the use of threaded joints, which EPA believes are susceptible to more frequent and larger quantities of releases than welded flanges. Threaded joints are used in metals where the walls are thick enough to withstand considerable pressure and corrosion after reduction in thickness due to threading. Threading is not a precise machining operation, and filler materials such as "pipe dope" are necessary to block the spiral leakage path.

Several characteristics of threaded joints make them more susceptible to leakage than welded flanges. Threads notch the pipe and reduce its strength and fatigue resistance. Enlargement and contraction of the flow passage at threaded joints creates turbulence. Thus, corrosion and erosion may be aggravated at the point where a pipe has already been thinned by threading. The tendency of pipe wrenches to crush pipes and fittings limits the torque available for tightening threaded joints thereby possibly excluding the necessary amount of tightening. For low-pressure systems, a slight rotation in the joint may be used to impart flexibility to the system, but this same rotation may cause leaks to develop in higher-pressure systems. In some metals, galling (i.e., a wearing down) occurs when threaded joints are disassembled.

Flanged joints come in a wide variety of types and facings. Welded-neck flanges provide joints as strong as the pipe under all types of static and cyclic loading. Slip-on, socket-weld, and lap-joint flanges provide joints as strong as the pipe under static loading but have lower resistance to cyclic stresses.

EPA realizes that flanged connections cannot be considered equivalent to an all-welded pipe system without flanges and will, therefore, pose a potential leak source. However, welded flanges eliminate, in EPA's opinion, the point of most probable leakage—i.e., the threaded pipe connection to the flange. With respect to potential leakage, flanges are superior to threaded connections because of the higher quality and more consistent workmanship and supervision associated with flange assembly and because of the inherent problems with threaded joints discussed above. While the flange-to-flange seals can leak, the occurrence of leakage from flanges is much lower than from threaded joints due to the larger seal surface area for the flange joint (a large surface on flange face versus a few sealing threads in the threaded connection). Also, with proper selection of bolt materials and washers, the mechanical seal can be kept under continuous compressive force, whereas the threaded joint relies on thread sealing compound to compensate for the contraction and expansion of the threaded joint. In any case, if a leak does occur in the mechanical seal it can be easily detected visually and corrected immediately.

Weld-neck and lap-joint flanges are preferable to socket-weld and slip-on flanges because they provide the greatest resistance to static stress. Socket-weld and slip-on flanges provide a lesser degree of structural integrity because the welds may eventually weaken, particularly from cyclical stress (vibration, hammering, opening/closing of valves, etc.). Nevertheless, EPA believes that any of these welded flanges, if properly specified, installed, inspected, and maintained in accordance with American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), and other piping component standards, and if properly managed in compliance with the revised hazardous waste tank system standards (e.g., compatibility, design certification, installation certification, inspections, and response to leak/spills), should pose a very low risk of leakage. For example, a properly designed piping system should take cyclical loading into account and use pulsation dampers, flex joints, expansion joints, etc., to eliminate or substantially minimize the effect of cyclical stresses. Thus, as specified on the revised tank system rules, the Agency believes secondary containment is not necessary for aboveground welded flanges (i.e., welded at the joint of the pipe to the flange) that are visually inspected on a daily basis. For the purpose of §§ 264.193(f) and 265.193(f) EPA interprets the term "Welded flange" to mean weld-neck, lap-joint, slip-on, and socket-weld flanges.

2. Applicability of Exemption for Certain Types of Joints and Connections

Since promulgation of the revised tank system standards, EPA has received numerous inquiries regarding the intended scope of the exemption from secondary containment for welded joints and welded connections. For example, inquirers have requested clarification on the applicability of this exemption to plastic piping connections, and compression, soldered/brazed and other tubing connections.

A wide diversity of joints/connections can be used in the construction of a hazardous waste tank system. Considering the broad spectrum of reliability that can be expected of the joint/ connection, given such variables as material of construction, method of joining, quality control of joint/ connection assembly, etc., the issue is which types of joints/connections are sufficiently "welded" so as to be exempt from the requirement of secondary containment.

In general, and as previously discussed, one of EPA's main concerns lies with threaded fittings and joints. As explained below, fittings and joints that avoid the inherent problems associated with threaded fittings and joints, and that thereby provide a more reliable connection, are the types of fittings and joints most likely to be considered "welded" (that is to say, permanently joined in such a fashion as to be comparable to welding in reliability) and thus eligible for exemption from the secondary containment requirement. This exemption is only applicable to aboveground piping systems that are visually inspected on a daily basis.

a. *Plastic piping connections.* Plastic pipe and fittings may be joined by a solvent-cement, by heat fusion, or by a mechanical device such as threads or a ring seal. A brief description of each type of joint is given below:

- Solvent cement softens the surfaces of the components, which then solidify as the solvent evaporates.
- With heat fusion, the surfaces are heated with special tools until they have softened. When engaged, the softened surfaces flow together, forming a joint as the material cools. There are three basic types of heat-fused joints: butt fused, socket or insert fused, and saddle fused.
- Mechanical means or devices can be used to develop a pressure seal. Types of mechanical joints include threaded joint, compression gasket joint, compression fitting joint, clamped insert-fitting joint, bell-and-spigot gasket or push-on joint, flanged joint, and flare joint.

Of all the joining techniques, solvent-cementing and heat fusion can be considered equivalent to welding in metal pipe systems. In both cases, the plastic is melted or "welded" together. The choice of the particular bonding depends on the type of plastic. Polyvinylchloride (PVC) and chlorinated polyvinylchloride (CVPC) pipes are solvent cemented, but polyvinylidene fluoride (PVDF) and polypropylene (PP) pipes require heat fusion, since they are not susceptible to solvent cementing. As with all joining techniques, the leak characteristics depend on the quality of workmanship involved. If the plastic components are properly joined, the risk of leakage should be the same as that of welded pipe.

According to ASTM standards, the pressure rating of solvent-cemented joints, properly fabricated, is equivalent to the pressure rating for the original pipe, after a reasonable time has been allowed for the joint to cure. The pressure rating of well-made, heat-fused joints is the same as the pressure rating for the original pipe after the material in the joint has cooled to the pipe temperature.

However, EPA notes that care must be taken in the selection and application of a particular plastic pipe. The pipe must be suitable for the internal fluid and the external conditions. For example, some pipes may need to be wrapped to prevent stress cracking from ultraviolet light.

Flared-tube joints, insert fittings, and threaded joints are not as reliable as heat fusion and solvent-cement joining techniques and have a greater incidence of leaks than do the welded pipes. Of these, threaded joints have the greatest likelihood of leaking, insert fittings the next greatest, and flared-tube joints the least likelihood of the three.

Depending on the type of material and/or the manufacturer, certain joining devices may lower the maximum pressure rating of the piping system. Typically, threaded and mechanical joints of particular plastics may lower the maximum pressure rating (of the pipe joined) by as much as 50 percent.

Given this information, EPA is convinced that solvent-cemented and heat-fused connections in plastic piping systems are analogous to welded metallic connections and should thus be considered "welded" for purposes of the exemption from secondary containment requirements under 40 CFR 264.193 and 265.193. Mechanical joints, however, would need secondary containment.

The methods used to join plastic pipes and fittings depend on the type of plastic(s) being joined. Applicable ASTM practices should be consulted to ensure that the method used is compatible with the materials being joined. In addition, the recommendations of the manufacturer should be considered when determining which method and the details of the procedure to be used.

The ASTM standards provide specifications, test methods, practices, and guides for plastic pipes and fittings made from these plastics. Plastic pipes and fittings made from several other types of plastic—most notably polypropylene (PP) and poly(vinylidene fluoride)(PVDF)—are commonly available in a wide variety of sizes. However, they are not covered as such by ASTM specifications.

b. *Tubing connections.* Since promulgation of the revised standards for hazardous waste tank systems, the Agency has received numerous questions concerning the equivalence of tubing components to all-welded piping. These components, used in making connections to valves, instruments, pressure gauges, and other ancillary devices, employ soldered and brazed joints, compression-fittings, and flared-fitting joints.

EPA does not have sufficient information to determine that these types of connections are equivalent to "welding" and thus is not exempting these connections from the requirement of secondary containment. The Agency believes that further consideration of an exemption for these connections is necessary and welcomes any data that addresses the reliability of these connections.

i. *Soldered and brazed joints.* Soldering is a metal-joining process wherein a nonferrous alloy is heated to a suitable temperature and fused to the metals being joined. The filler metal (solder) is distributed between closely fitted surfaces of the joint by capillary attraction. In general, solders are lead-tin alloys and may contain antimony, bismuth, and other elements.

Soldered joints are most widely used in pipe or tubing sizes 2 inches and smaller where the heat requirements are less burdensome. Properly made, the joints are completely impervious. Soldered joints should not be used in areas where plant fires are likely because exposure to fire rapidly and completely melts the joints. Nor should they be used where the pipe contains flammable or toxic fluids or where the piping is subject to thermal shock or mechanical vibrations.

Brazing is a metal-joining process wherein a nonferrous metal is heated to a suitable temperature and fused to the metals being joined. The filler metal is distributed between the closely fitted surfaces of the joint by capillary attraction.

Silver-brazed joints are similar to soldered joints, except they require a temperature of about 1100°F for fusion to occur. Silver-brazed joints are used where temperature or the combination of temperature and pressure is beyond the range of soldered joints. They are also more reliable in the event of plant fires and are more resistant to vibration.

Braze welding is a welding process using a nonferrous filler metal having a melting point below that of the base

metals, but above 800 °F (427 °C). The filler metal is not distributed in the joint by capillary attraction.

EPA believes that soldered and brazed fittings are not equivalent to welded piping. Regardless of how well these joints are made, they will continue to be a greater source of leakage than a welded connection, which has the strength of the pipe itself. However, if installed properly and within their design limitations, EPA believes that these joints have a very low risk of leakage. If a leak does occur, it should be visually detected in most circumstances, and tubing normally has a piping take-off valve for isolation. Tubing also generally has small bores so leaks will normally be minor, except in high-pressure service.

Although the Agency acknowledges that these types of connections are somewhat less reliable than a welded connection, EPA believes that the combination of a relatively low risk of leakage, the required compliance with standards for proper design, installation, and inspection, and the impracticality of designing secondary containment for such connections may make a reasonable case for exempting these connections from the requirement for secondary containment. The Agency is continuing to study this issue and may amend the regulations in the future to provide such an exemption for these connections.

ii. *Compression Fittings.* A compression fitting can be an integral part of a tank system component (e.g., the fitting is built into the valve or pressure gauge), or it can be a separate piece that is threaded to the component. These fittings are used where the tubing has too high a ratio of wall thickness to diameter for flaring or where the tubing lacks sufficient ductility for flaring. The seal is made by a ferrule ring that is slipped over the end of the tube and compressed onto the tube by a compression nut on the fitting. The ferrule ring has two sealing surfaces: a smooth-bore inner-diameter surface that is compressed onto the tube surface, and a smooth conical-shaped outer-diameter surface that makes a metal-to-metal seal to a matching machined-cone surface in the body or housing of the compression fitting. The sleeve must be considerably harder than the tubing, yet still ductile enough to be diametrically compressed. It also must be as resistant as the tubing to corrosion by the fluid handled. Because the ferrule is under great compression force, a very tight seal is obtained. This force is usually sufficient to overcome differences in coefficients of thermal expansion of the materials used for the tube and fitting, normal vibration, and other factors that would cause threaded joints to leak.

Properly designed and manufactured compression fittings rarely leak. They are used in highly critical applications, such as connections for fuel lines and hydraulic systems on aircraft. Flareless compression fittings are used extensively and can be designed for systems up to 60,000 pounds per square inch gauge (psig). The ANSI B31.3 Code lists no restrictions for compression fittings, except that they be safeguarded if used in severe cyclic conditions. Leaks, when they occur, are usually attributed to one of the following causes:

—Dirt or debris trapped on the sealing surface;

—Improper torqueing (too loose or over-tightening);

—Wear or scoring from excessive removal and reinstallation of the connection;

—Damage from handling during installation or removal; or

—Excessive vibrations or bending moments at the tube-to-fitting interface.

EPA believes that compression fittings used on metallic tubing may be nearly as reliable as welded connections. EPA is considering amending the rules to exempt metal tubing that uses compression fittings (but not with a threaded connection between the fitting and device) from the secondary containment requirement.

The Agency is convinced, however, that secondary containment should be required for plastic piping connections that use compression fittings. Although plastic piping can be joined in a manner similar to compression fittings for metal piping, the technique is substantially different. Since metals are ductile, the ferrule metal seal and the tubing are both actually compressed by the compression nut. On the other hand, plastics are not as ductile or as strong as metals, and a seal is made by the much lower compressive force of an elastomer sealing ring. Thus, EPA does not believe that these plastic systems afford sealing equivalent to that of solvent-cemented or fused joints.

iii. *Flared-fitting joints.* Flared-fitting joints are used for ductile tubing in cases where the ratio of wall thickness to the diameter is small enough to permit flaring without cracking the inside surface. The tubing must have a smooth interior surface. A flared fitting that employs a sleeve avoids torsional strain on the tubing and minimizes vibration fatigue on the flared portion of the tubing. More labor is required for assembly, but it is more resistant to temperature cycling than other tubing fittings and is unlikely to be damaged by over-tightening. For these fittings, less control of tube diameter is required.

The Agency believes that flared-fitting joints, although not as reliable as compression fittings, still present a low risk of leakage. However, given the lack of available data on the reliability of flared-fitting joints, EPA is unable at this time to determine whether these joints should be exempted from the requirement of secondary containment. The Agency may consider this issue in a future rulemaking.

3. Exemption of Aboveground Sealless Valves

As previously discussed, 40 CFR 264.193 and 265.193 of the final rule exempt certain aboveground piping system components from the secondary containment requirement. EPA has received several inquiries regarding an apparent inconsistency between the discussion of these exemptions in the preamble (51 FR 25450, July 14, 1986) and the list of exemptions codified in 40 CFR 264.193(f)(1)–(4) and 265.193(f)(1)–(4) (51 FR 25475 and 25483). Sealless pumps are exempted under §§ 264.193(f) and 265.193(f) because they do not use traditional packing materials, which are a common source of leakage. Similarly, the Agency intended to exempt sealless valves, as mentioned in the preamble discussion, provided that a welded connection is used to join the sealless valve to the piping. However, the regulatory exemption refers to sealless pumps, but not sealless valves. Thus, today EPA is correcting its omission of sealless valves from the regulatory language of 40 CFR 264.193(f)(3) and 265.193(f)(3) by adding sealless valves to the list of piping components that need not be provided with secondary containment.

4. Extent of Required Leak Detection.

Sections 264.193(b) and 265.193(b) set out the performance standards for secondary containment systems. Additional details on how to meet these performance standards are found in §§ 264.193(c) and 265.193(c). EPA has received several inquiries regarding the intent of the wording in 40 CFR 264.193(c)(3) and 265.193(c)(3) which states that secondary containment systems must be:

Provided with a leak-detection system that is designed and operated so that it will detect the failure of either the primary or secondary containment structure or the presence of any release of hazardous waste or accumulated liquid in the secondary containment system within 24 hours * * *.

Numerous inquirers took this provision to mean that the Agency was intending that a leak detection capability be provided both within and external to, the secondary containment structure. Several other inquirers requested clarification of whether the Agency requires detection of failure of either the primary or secondary containment structures or the presence of any release, or both.

Under this provision, EPA intended that the leak detection component of a secondary containment system promptly detect any release from the primary structure into the secondary containment structure. EPA used the wording, "Provided with a leak detection system that is designed and operated so that it will detect failure of either the primary or secondary containment structure", to ensure that double-walled tanks which detect failure of either the primary or the secondary containment structure (e.g., via loss of pressure in the interstitial space between the two walls) meet the requirements of §§ 264.193(b) and 265.193(b). This provision should not be interpreted to require leak detection outside of the secondary containment structure in order to detect failure of the secondary containment structure.

5. Requirements for Concrete Liners

In 40 CFR 264.193(e) (1) and (2), and 265.193(e) (1) and (2), EPA promulgated standards applicable to external liners and vault systems. The external liner requirements of 40 CFR 264.193(e)(1) and 265.193(e)(1) address the subject of liners generically. For example, they do not differentiate between synthetic membrane liners and concrete. On the other hand, the requirements for vault systems under 40 CFR 264.193(e)(2) and 265.193(e)(2) are applicable only to concrete.

However, EPA did not intend that concrete used, for example, as a base and diking material for secondary containment of an aboveground tank or onground tank should be subject to requirements significantly different from concrete that is used in the construction of a secondary containment vault. Certain of the requirements promulgated for concrete vaults are appropriate and are intended to be applied to situations where concrete is used in the construction of any secondary containment structures. Thus, concrete liner systems must also meet the more specific requirements of 40 CFR 264.193(e)(2) (iii) and (iv) and 265.193(e)(2) (iii) and (iv) in order to meet the general performance standards under 40 CFR 264.193(e)(1) (iii) and (iv) and 265.193(e)(1) (iii) and (iv), which specify that the liner system be free of cracks or gaps and designed to prevent migration of the waste. Chemical-resistant water stops at all joints, as specified in 40 CFR 264.193(e)(2)(iii) and 265.193(e)(2)(iii) are appropriate for any concrete structure serving as a secondary containment device. Likewise, given the relative permeability of concrete, the Agency believes that most secondary containment concrete structures, vaults or otherwise, will require an impermeable coating or lining that will prevent migration of waste into the concrete as specified in 40 CFR 264.193(e)(2)(iv) and 265.193(e)(2)(iv). Such coating or lining must also be compatible with the waste(s) managed within the secondary containment structure.

6. Secondary Containment of Pressurized Piping with Automatic Shut-Off Devices.

EPA has received a number of questions regarding the exemption from secondary containment of pressurized piping with automatic shut-off devices.

Under 40 CFR 264.193(f)(4) and 265.193(f)(4), aboveground pressurized piping systems with automatic shutoff devices that are visually inspected on a daily basis are exempt from the secondary containment requirement. Furthermore, this provision allows this exemption even if welded flanges, welded joints, welded connections, sealless valves, and sealless or magnetic coupling pumps are not used. However, the Agency is reconsidering this exemption. EPA may have overestimated the effectiveness of automatic shut-off devices. Although these devices should certainly limit the quantity of waste released in case of a substantial failure somewhere in the piping system (e.g., pipe rupture), they would be unlikely to have any effect on reducing the number or size of releases in piping systems due to small or slow leaks at valves, connections, flanges, etc.

It was not EPA's intent to prescribe less importance to small leaks in pressurized piping systems. In fact, such less-than-major leaks would be of greater concern in pressurized piping systems compared to nonpressurized systems due to the potential to release larger quantities of hazardous waste.

Thus, the Agency believes that it may be prudent to require all aboveground piping systems, pressurized as well as nonpressurized, and even with automatic shut-off devices, to use welded joints, sealless valves, sealless or magnetic coupling pumps, etc., in order to be exempted from the secondary containment requirement. In fact, automatic shut-off devices may also need to be welded so as not to be a source of leakage. Using this approach, automatic shut-off devices might be used to protect against catastrophic releases and serve as a means to limit the size of the secondary containment system(s), where needed, rather than serve as a means for the entire piping system to be exempted from secondary containment. EPA is considering proposing such an amendment to the tank system standards in the near future.

C. Extent of Cathodic Protection for Primary Tanks

EPA received several inquiries regarding the intent of the 40 CFR 264.193(e)(3)(ii) and 265.193(e)(3)(ii). That regulation specifies double-walled tanks must be "protected, if constructed of metal, from both corrosion of the primary tank interior and of the external surface of the outer shell * * *." Apparently, this wording has been interpreted to mean that cathodic protection must be provided for the interior surface of the primary tank. This was not EPA's intent.

With respect to the interior of the primary tank, this requirement was chiefly intended to address the excessive or accelerated corrosion of the primary tank's interior surface resulting from incompatibility between the tank construction material and the stored waste(s). This provision thus reiterates the requirement found elsewhere in the standards (e.g., 40 CFR 264.191(b), 264.192(a)), that accelerated corrosion of the primary tank's interior surfaces must be prevented. However, this provision does not mandate cathodic protection of the interior surface of primary tank structures.

D. Application of the Immediate Response Exemption to Sumps

As part of the settlement of the *EEI* litigation, EPA agreed to clarify the applicability of the immediate response exemption under 40 CFR 264.1(g)(8) and 265.1(c)(11) to sumps. The July 14, 1986, final rule discussed three types of sumps that may be regulated as tanks under this revised rule: "temporary tanks," secondary containment sumps, and primary containment tanks. With respect to temporary tanks, i.e., tanks used for storage of waste in response to a leak or spill, and other temporary, unplanned occurrences, the Agency stated that no Subpart J standards were applicable since such storage was exempted from these regulatory requirements under 40 CFR 264.1(g)(8) and 265.1(c)(11) (51 FR 25445). Those sections (along with 40 CFR 270.1(c)(3))

11. Section 265.190 is amended by revising the first sentence of paragraph (a) and by revising paragraph (b) to read as follows:

§ 265.190 Applicability.

* * * * *

(a) Tank systems that are used to store or treat hazardous waste which contains no free liquids and that are situated inside a building with an impermeable floor are exempted from the requirements in § 265.193. * * *

(b) Tank systems, including sumps, as defined in § 260.10, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes are exempted from the requirements in § 265.193(a).

* * * * *

12. Section 265.193 is amended by revising paragraphs (f)(3) and (g)(3)(iii) to read as follows:

§ 265.193 Containment and detection of releases.

* * * * *

(f) * * *

(3) Sealless or magnetic coupling pumps and sealless valves, that are visually inspected for leaks on a daily basis; and

* * * * *

(g) * * *

(3) * * *

(iii) If contaminated soil cannot be removed or decontaminated in accordance with paragraph (g)(3)(ii) of this section, comply with the requirements of § 265.197(b);

* * * * *

13. Section 265.196 is amended by revising the first Note to read as follows:

§ 265.196 Response to leaks or spills and disposition of leaking or unfit-for-use tank systems.

* * * * *

Note.—The Regional Administrator may, on the basis of any information received that there is or has been a release of hazardous waste or hazardous constituents into the environment, issue an order under RCRA section 3004(v), 3008(h), or 7003(a) requiring corrective action or such other response as deemed necessary to protect human health or the environment.

* * * * *

14. Section 265.201 is amended by revising paragraph (c)(3) to read as follows:

§ 265.201 Special requirements for generators of between 100 and 1,000 kg/mo that accumulate hazardous waste in tanks.

* * * * *

(c) * * *

(3) The level of waste in the tank at least once each operating day to ensure compliance with § 265.201(b)(3);

* * * * *

PART 270—EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM

40 CFR Part 270 is amended as follows:

15. The authority citation for Part 270 is revised to read as follows:

Authority: 42 U.S.C. 6905, 6912, 6924, 6925, 6927, 6939, and 6974.

16. Section 270.2 is amended by revising the following definitions in alphabetical order:

§ 270.2 Definitions.

* * * * *

Elementary neutralization unit means a device which: (a) Is used for neutralizing wastes only because they exhibit the corrosivity characteristic defined in § 261.22 of this chapter, or are listed in Subpart D of Part 261 of this chapter only for this reason; and (b) Meets the definition of tank, tank system, container, transport vehicle, or vessel in § 260.10 of this chapter.

* * * * *

Wastewater treatment unit means a device which:

(a) Is part of a wastewater treatment facility which is subject to regulation under either section 402 or 307(b) of the Clean Water Act; and

(b) Receives and treats or stores an influent wastewater which is a hazardous waste as defined in § 261.3 of this chapter, or generates and accumulates a wastewater treatment sludge which is a hazardous waste as defined in § 261.3 of this chapter, or treats or stores a wastewater treatment sludge which is a hazardous waste as defined in § 261.3 of this chapter; and

(c) Meets the definition of tank or tank system in § 260.10 of this chapter.

* * * * *

[FR Doc. 88-19030 Filed 9-1-88; 8:45 am]

BILLING CODE 6560-50-M

FEDERAL EMERGENCY MANAGEMENT AGENCY

44 CFR Part 64

[Docket No. FEMA 6806]

Suspension of Community Eligibility; Alabama et al.

AGENCY: Federal Emergency Management Agency, FEMA.

ACTION: Final rule.

SUMMARY: This rule lists communities where the sale of flood insurance has been authorized under the National Flood Insurance Program (NFIP), that are suspended on the effective date shown in this rule because of noncompliance with the revised floodplain management criteria of the NFIP. If FEMA receives documentation that the community has adopted the required revisions prior to the effective suspension date given in this rule, the community will not be suspended and the suspension will be withdrawn by publication in the Federal Register.

EFFECTIVE DATE: As shown in fifth column.

FOR FURTHER INFORMATION CONTACT: Frank H. Thomas, Assistant Administrator, Office of Loss Reduction, Federal Insurance Administration, Federal Center Plaza, 500 C Street SW., Room 416, Washington, DC 20472, (202) 646-2717.

SUPPLEMENTARY INFORMATION: The NFIP enables property owners to purchase flood insurance at rates made reasonable through a Federal subsidy. In return, communities agree to adopt and administer local floodplain management measures aimed at protecting lives and new construction from future flooding. Section 1315 of the National Flood Insurance Act of 1968, as amended (42 U.S.C. 4022), prohibits flood insurance coverage as authorized under the NFIP (42 U.S.C. 4001–4128) unless an appropriate public body shall have adopted adequate floodplain management measures with effective enforcement measures.

On August 25, 1986, FEMA published a final rule in the Federal Register that revised the *NFIP floodplain management* criteria. The rule became effective on October 1, 1986. As a condition for continued eligibility in the NFIP, the criteria at 44 CFR 60.7 require communities to revise their floodplain management regulations to make them consistent with any revised NFIP regulation within 6 months of the effective date of that revision or be *subject to suspension from participation* in the NFIP.

The communities listed in this notice have not amended or adopted floodplain management regulations that incorporate the rule revision. Accordingly, the communities are not compliant with NFIP criteria and will be suspended on the effective date shown in this final rule. However, some of these communities may adopt and submit the required documentation of legally enforceable revised floodplain management regulations after this rule is

TOTAL P.11

syngenta
CROP PROTECTION, INC.
ST. GABRIEL PLANT

☐ HAZARDOUS WASTE
☒ NON-HAZARDOUS WASTE
WASTE STREAM NO. SY4849

WASTE DATA SHEET (IN-PLANT)

SY4849.27

GENERATOR INFORMATION:

NAME: Terry Roy TITLE: Shift Supervisor SRL383304

PLANT PHONE: ext. 1463 PAGER NUMBER: N/A

PLANT AREA GENERATING WASTE: ET

GENERAL WASTE DESCRIPTION: Waste Triazine Recovery (WTR) and BAS solids

TYPE OF PROCESS GENERATING WASTE: WTR and BAS solids dewatering press

QUANTITY: GALS: LBS: NO. OF CONTAINERS: OTHER:

TRANSPORTATION EQUIPMENT:

TANK TRUCK ☐ VACUUM TRUCK ☐ FLATBED ☐ DUMP TRUCK ☒

BIN ☐ VAN TRUCK ☐ TANK CAR ☐ OTHER ☐ _____

METHOD OF COLLECTION:

FIBERPAKS ☐ DRUMS ☐ TANKS ☐ SUMPS ☒

CONTAINER SIZE _____ OTHER ☐ _____

OTHER AVAILABLE COLLECTION / HANDLING INFORMATION: TRAILER I.D. # _____

INDICATE ANY SAFETY PRECAUTIONS / EQUIPMENT: N/A

CHEMICAL COMPOSITION: PROCESS KNOWLEDGE ☒ ANALYSIS ☐ (PROVIDE COPIES OF LAB REPORTS)

< 500 PPM VOC's ☒ > 500 PPM VOC's ☐ (MUST SPECIATE BELOW IF > 500 PPM VOC's)

COMPOUND NAME	LOW	NORMAL *	HIGH	CHEMICAL FORMULA / CAS NO.
Water	50 %	60 %	70 %	
Inert solids (dirt and sand)	15 %	20 %	35 %	
Chloride and carbonate salts	3 %	9 %	15 %	CaCO3, CaCl2, NaCl
Microbial solids (bugs, dry basis)	4 %	8 %	12 %	
Triazine herbicides	1 %	3 %	5 %	

* MUST TOTAL 100%

LABORATORY ANALYSIS * :

PROCESS KNOWLEDGE ☒ ANALYSIS ☒

TOTAL METALS:

Be	12	Mg/Kg	Mn	200	Mg/Kg
Sb	< 41	Mg/Kg	Ni	560	Mg/Kg
Tl	16	Mg/Kg	ORG. I	< 0.04	% WT
Pb	65	Mg/Kg	ORG. Cl	1.5	% WT
Hg	1.6	Mg/Kg	N	60,000	Mg/Kg
Cd	26	Mg/Kg	CN	9.5	Mg/Kg
Ba	510	Mg/Kg	TOC	500	Mg/Kg
As	81	Mg/Kg	Br (TOTAL)	< 0.08	% WT
Cr	100	Mg/Kg	Cl (TOTAL)	2.5	% WT
Se	23	Mg/Kg	F (TOTAL)	0.069	% WT
Ag	5.2	Mg/Kg	I (TOTAL)	< 0.04	% WT
Zn	490	Mg/Kg	S (TOTAL)	0.1	% WT
Cu	370	Mg/Kg			

PHYSICAL PROPERTIES :

PROCESS KNOWLEDGE ☒ ANALYSIS ☒

PHYSICAL STATE @ 25°C

GAS		LIQUID	
SOLID	X	SLUDGE	
SLURRY		PASTE	
GRANULAR		CRYSTAL	
POLYMERIC		AMORPHOUS	

NUMBER OF PHASES one

VISCOSITY solid

BTU 5,600 / lb

ASH 39 %

VAPOR PRESSURE _____ @ _____

SPECIFIC GRAVITY: > 1

DENSITY _____

pH 6 - 9

FLASH PT >140°F

* NOTE: PROVIDE COPIES OF ANALYTICAL REPORTS; NE = NOT EXPECTED - MEANS LOWER THAN DETECTABILITY; N/A = NOT APPLICABLE - FOR SOLIDS TOC, VISCOSITY, AND VAPOR PRESSURE ARE NORMALLY N/A.

syngenta
CROP PROTECTION, INC.
ST. GABRIEL PLANT

WASTE DATA SHEET (IN-PLANT)

DETAILED WASTE DESCRIPTION:

IS THE WASTE REACTIVE WITH WATER? No WITH AIR? No

IS A REPRESENTATIVE SAMPLE PROVIDED? Yes

GIVE ANY OTHER ADDITIONAL INFORMATION ON THE HAZARDS OF THE WASTE: None by analysis

TCLP ORGANICS PRESENT? (LIST IF PRESENT): None by analysis and process knowledge

PYROPHORIC? No SHOCK SENSITIVE? No INFECTIOUS WASTE? No

RADIOACTIVE? No SPECIALLY RESTRICTED FIFRA PESTICIDES? No CHLORINATED DIBENZOFURANS? No

EXPLOSIVE? No DIOXINS? No OSHA CARCINOGEN? No

PCB CONC. ≥ 50 ppm? No

ANNUAL REPORT INFORMATION	
SIC CODE	
SOURCE	
FORM	
ORIGIN	
SYSTEM TYPE	
WM ACTIVITY CODES	

CLASSIFICATION OF WASTE?

A. HAZARDOUS ____ NON-HAZARDOUS X

B. RCRA CHARACTERIZATION CODES: None

C. REASON FOR ABOVE CHARACTERIZATION: Not a RCRA listed or characteristic waste

DISPOSAL CERTIFICATIONS:

1. IS THIS WASTE EXCLUDED FROM DIRECT LAND DISPOSAL BY LAND DISPOSAL REGULATIONS THAT ARE IN EFFECT ON THE DATE OF THIS WASTE DATA SHEET? YES ☐ NO ☒
   IF YES, DESCRIBE WHICH RESTRICTION(S) APPLIES TO THIS WASTE. (SEE 40CFR268 AND 40CFR761.)
2. UNDER 40CFR268, CAN THIS WASTE BE LANDFILLED DIRECTLY OR CHEMICALLY STABILIZED AND LANDFILLED? YES ☒ NO ☐
   IF YES, COMPLETE LAND BAN CERTIFICATION FORM MUST BE ATTACHED TO EACH MANIFEST.
3. UNDER 40CFR268, SHOULD THIS WASTE BE INCINERATED? YES ☒ NO ☐
   IF YES, COMPLETED LAND BAN CERTIFICATION FORM MUST BE ATTACHED TO EACH MANIFEST.
4. IS WASTE A LAB PACK? YES ☐ NO ☒ IF YES, COMPLETE SYNGENTA LAB PACK PACKING LIST.

I HEREBY CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND ACCURATE. I HAVE INVESTIGATED WASTE MINIMIZATION ALTERNATIVES FOR THIS WASTE. THIS WASTE MUST BE TREATED/DISPOSED.

GENERATOR'S SIGNATURE — OPERATOR (TITLE) — 1/21/06 (DATE)

THIS PART TO BE FILLED OUT BY ENVIRONMENTAL AND REGULATORY AFFAIRS GROUP (ERAG)

DISPOSAL:

ON-SITE INCINERATION:
TANK MATERIAL UNLOADED: 4609F QUANTITY: 19375 DATE: 1/31/06

OFF SITE:
NAME OF DISPOSAL FACILITY:
METHOD OF DISPOSAL:
DATE DISPOSED:

ERAG SIGNATURE — ED WMS (TITLE) — 2-3-06 (DATE)

ENVIRONMENTAL FORM 85-1 REVISED 10/00

BSC2N1120C

ADDENDUM TO SYNGENTA, ST. GABRIEL WASTE DATA SHEET

Waste stream number: SY4849

CHEMICAL COMPOSITION	CONCENTRATION RANGE LOW	NORMAL	HIGH
Mesotrione, Metolochlor, Lambda Cyhalothrin, Glyphosate	0ppm	5ppm	10ppm
Toluene	0ppm	20ppm	50ppm

Revised 1/17/06

Revised 12/14/06

7.0 SECONDARY CONTAINMENT

There are two tanks inside the secondary containment for this area, Tank 4604-F1- the sludge hopper, and Tank 4609-F – the sludge silo. These tanks contain a dewatered filter cake, which has no free liquids. Failure of these tanks and spill of their contents onto the containment slab would result in a pile of filter cake with a natural angle of repose of 33°. The entire contents of the tank would not "pour" out of the vessel, which is what happens when a liquid storage vessel ruptures. Design of the containment system was performed using 12% of the volume of the largest tank in this area, which is Tank 4609-F – the sludge silo.

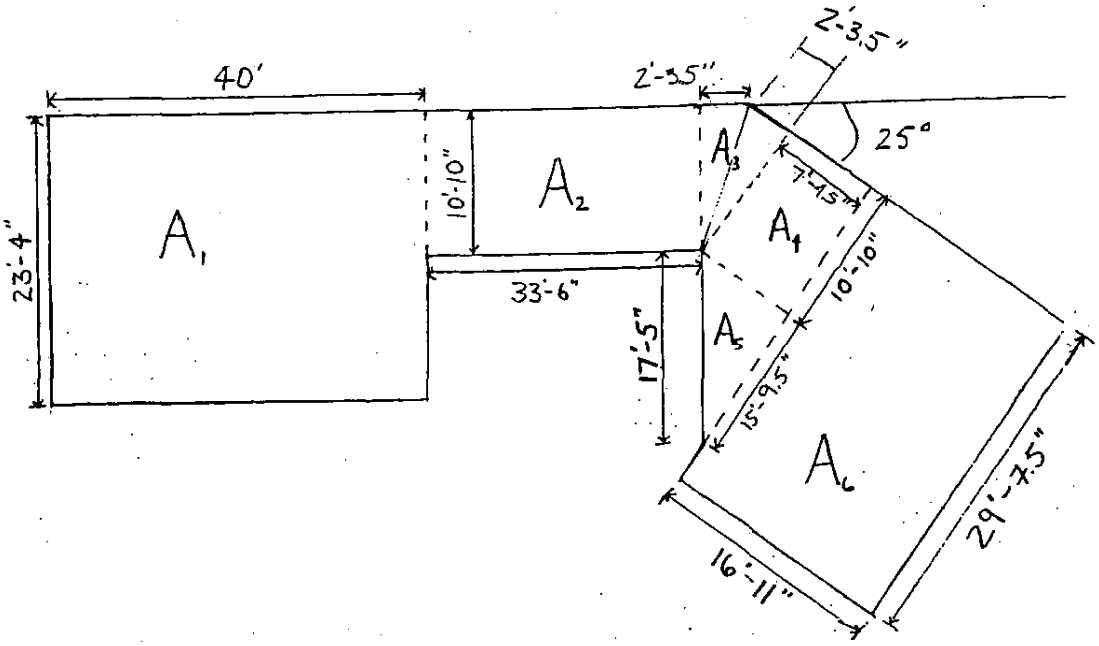
The secondary containment system for the sludge silo, 4609-F, consists of a reinforced concrete containment floor and 1'-0" high walls and a 6'-0" x 6'-0" x 6'-0" reinforced concrete containment sump with double walls and leak detection piping. All joints in the concrete are protected with water stop material and joint sealant.

The containment system was designed in accordance with the American Concrete Institute Report ACI 350R – Environmental Engineering of Concrete Structures, and meets all the requirements of the hazardous waste regulations.

The capacity of the containment is 19,040 gallons which is greater than 12% of the volume of Tank 4609-F (4,265 gallons) plus a 10.1" rainfall (12,343 gallons) = 16,608 gallons.

The containment's construction drawing and the containment volume calculations immediately follow this section.

CONTAINMENT AREA A_1 (SEE "SITE PLAN")



$A_1 = 23\text{-}4" \times 40'\text{-}0" = 933.33\ FT^2$

$A_2 = 10'\text{-}10" \times 33\text{-}6" = 362.92\ FT^2$

$A_3 = 2\left(\frac{1}{2} \cdot (10'\text{-}10" \cdot 2\text{-}3.5")\right) = 24.036\ FT^2$

$A_4 = 7'\text{-}4.5" \times 10'\text{-}10" = 79.733\ FT^2$

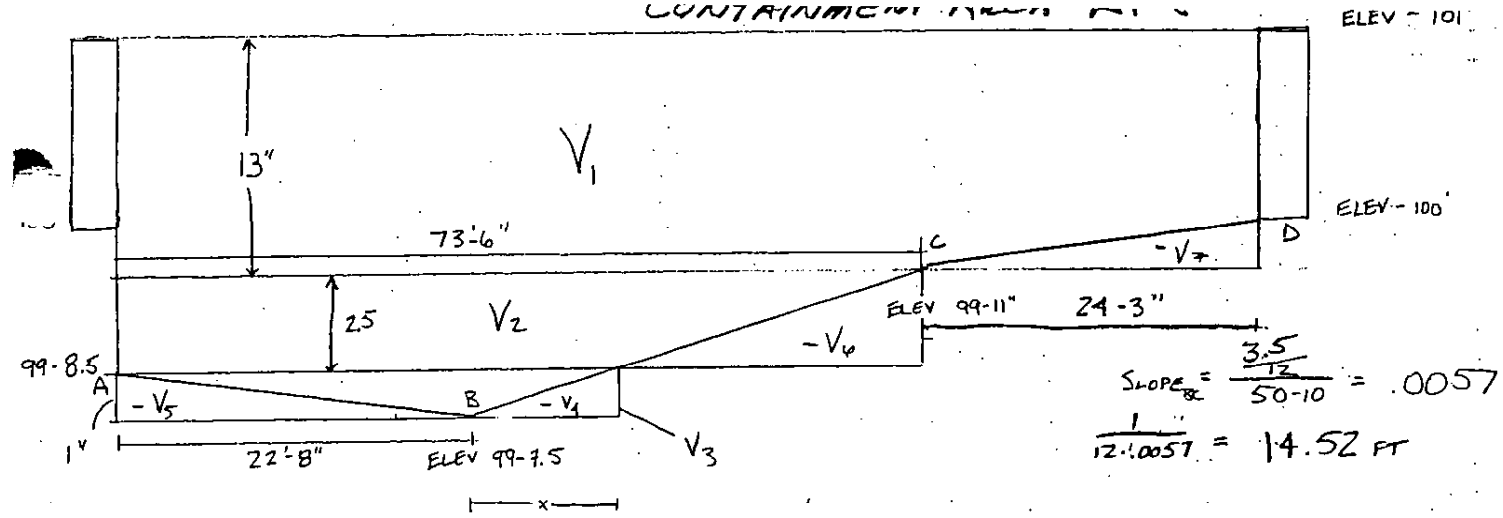
$A_5 = \frac{1}{2} \times 15'\text{-}9.5" \times 7'\text{-}4.5" = 58.089\ FT^2$

$A_6 = 16'\text{-}11" \times 29'\text{-}7.5" = 501.04\ FT^2$

$A_T = 933.33 + 362.92 + 24.036 + 79.733 + 58.089 + 501.04$

$= 1960\ FT^2$

CONTAINMENT AREA #1



$V_1 = A_{TOTAL} \cdot 13" = 1960 \cdot \frac{13}{12} = 2123.3\ FT^3$

$V_2 = (A_1 + A_2) \cdot 2.5" = (933.33 + 362.92) \cdot \frac{2.5}{12} = 270.05\ FT^3$

$V_3 = \frac{(22-8+14.52) \cdot 1" \cdot 23'-4"}{12} = \frac{867.78}{12} = 72.315\ FT^3$

$V_4 = \frac{(14.52 \cdot 1 \cdot \frac{1}{2}) \cdot 23'-4"}{12} = 14.167\ FT^3$

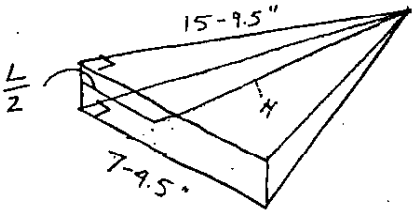
$= \frac{(22-8 \cdot 1 \cdot \frac{1}{2}) \cdot 23'-4"}{12} = 22.037\ FT^3$

$V_6 = \frac{(73'-6" - (22-8+14.52)) \cdot 10'-10" \cdot \frac{1}{2} \cdot 2.5}{12} + \frac{(40-(22-8+19.52)) \cdot (23-4-10-10") \cdot \frac{1}{2} \cdot 2.5}{12}$

$= 40.979 + 3.663 = 44.642\ FT^3$

$V_7 = \frac{24-3" \cdot 1" \cdot \frac{1}{2} \cdot 27-7.5"}{12} - V_P = 27.755 - 3.239$

$= 24.516\ FT^3$



$H = \sqrt{(\frac{7-9.5}{2})^2 + (15-9.5)^2} = 16.013\ FT$

$V_P = \frac{1}{3} \omega L H$

$= \frac{\frac{1}{3} \cdot 1" \cdot 7-4.5" \cdot 16.013}{12} =$

$V_T = 2123.3 + 270.05 + 72.315 - (14.167 + 22.037 + 44.642 + 24.516)$

$= 2360.5\ FT^3 = 2361\ FT^3 = 17,662$ GALLONS

CONTAINMENT AREA A. (SEE "SITE PLAN")

VOLUME DISPLACED BY PEDESTALS, EQUIP. PADS, ETC.

F-18: (2) 1.67' * 1.67' * 1.0' = 5.6 CF
PC-24: (4) * 2.5' * 2.5' * 1.0' = 25.0 CF
F-19: (1) * 1.33' * 2.5' * 1.0' = 3.3 CF
F-21: (1) * 4.5' * 1.75' * 1.0' = 7.9 CF
PC-22: (4) * 2.5' * 2.0' * 1.0' = 20.0 CF

31.2 CF

CONTAINMENT AREA A1 (SEE "SITE PLAN")

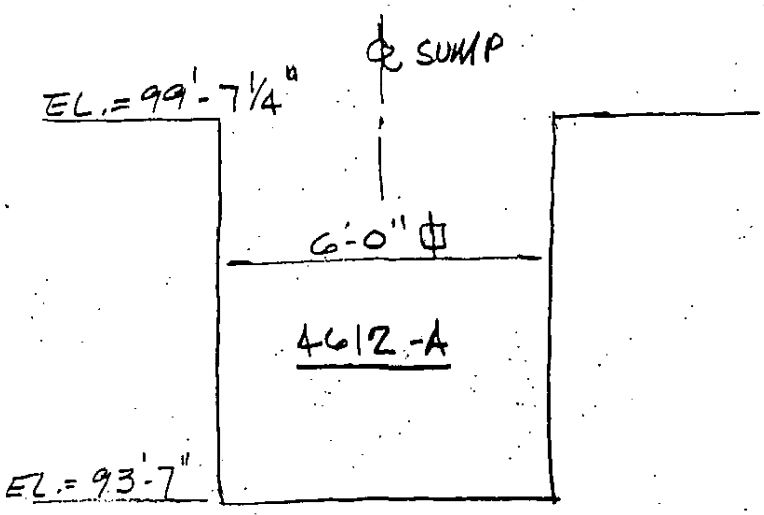
SUMP CONTAINMENT VOLUME DWG. 46-DC-007

SUMP 4612-A

AREA = 6'x6' = 36 SF

DEPTH = 6'

VOLUME = 216 CF



CONTAINMENT AREA A1

GROSS VOLUME = 2361 CF
SUMP VOLUME = 216 CF

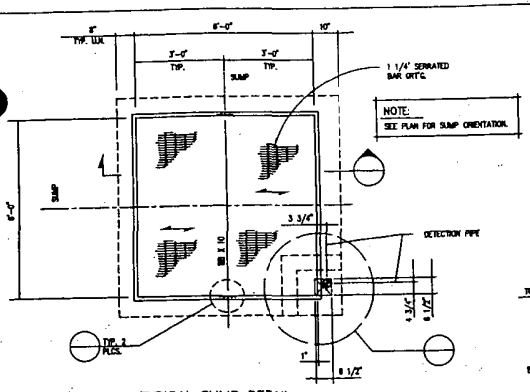
TOTAL GROSS VOLUME = 2577 CF
DISPLACED VOLUME = ⟨ 32 CF ⟩

NET VOLUME = 2545 CF

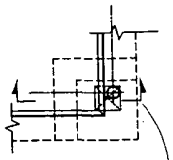
VOLUME FOR 25YR. STORM = GROSS SURFACE AREA * 10.1"/12
= 19600 SF * 10.1"/12

= 1650 CF

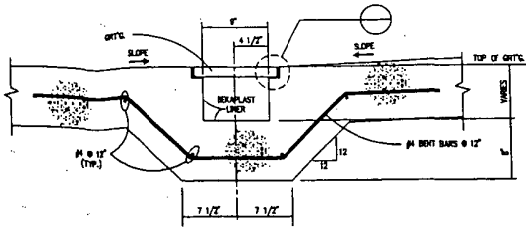
CONTAINMENT VOL. = 895 CF = 6,695 GALLONS



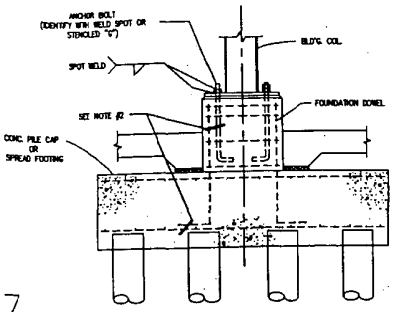
TYPICAL SUMP DETAIL



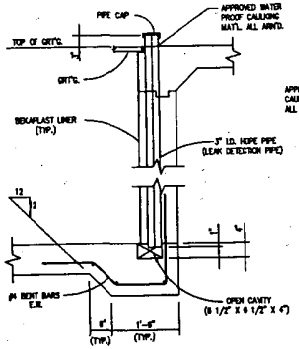
DETAIL 1

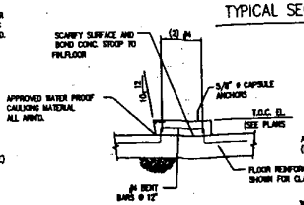


TYPICAL SECTION THRU TRENCH

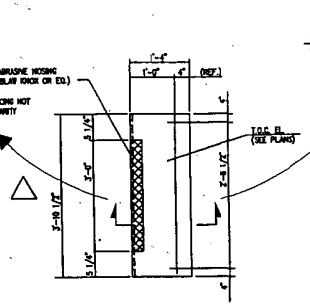


TYPICAL GROUNDING ELECTRODE
@
BUILDING COLUMN
(BY FOUNDATION CONTRACTOR)

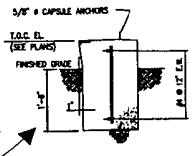




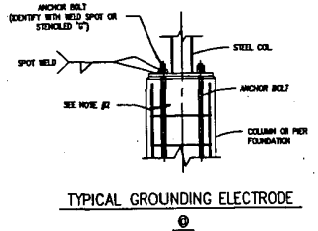
SECTION OF STOOP ON SLAB



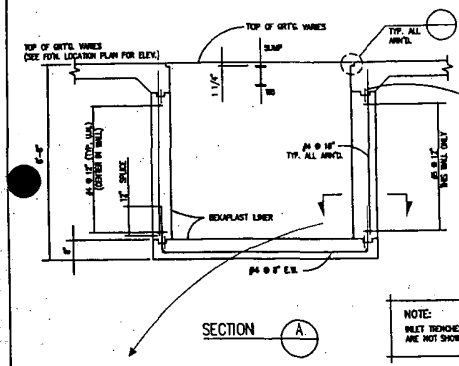
TYP STAIR STOOP



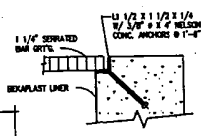
SECTION OF STOOP ON GRADE

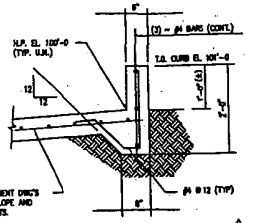


TYPICAL GROUNDING ELECTRODE
@
SUPPORT COLUMN
(BY FOUNDATION CONTRACTOR)

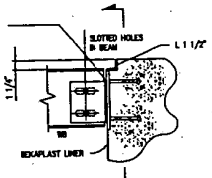


SECTION A



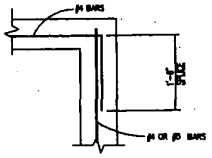


TYP CONTAINMENT CURB DETAIL

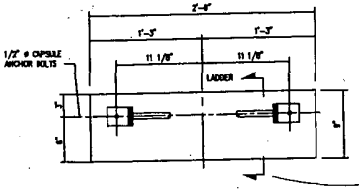


DETAIL 3

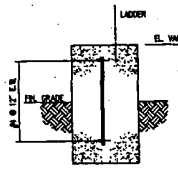
NOTE:
INLET TRENCHES AND SLAB REBAR ARE NOT SHOWN FOR CLARITY.



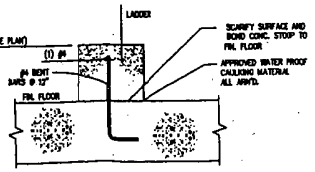
TYPICAL CORNER DETAIL



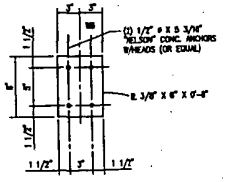
PLAN OF LADDER STOOP



SECTION OF STOOP ON GRADE



SECTION OF STOOP ON SLAB



NOTE:

1. FOR GENERAL STEEL & CONCRETE NOTES, SEE DWG. 46-DC-014.
2. (A) FIELD WELD #5 BAR BETWEEN ANCHOR BOLT AND FOUNDATION DOWEL @ PEDESTAL.
   (B) FIELD WELD #5 BAR BETWEEN FOUNDATION DOWEL AND PILE CAP OR SPREAD FOOTING REBAR.

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ENGINEERS—CONSTRUCTORS
SALT LAKE CITY, UTAH

syngenta
CROP PROTECTION INC.
St. Gabriel Plant

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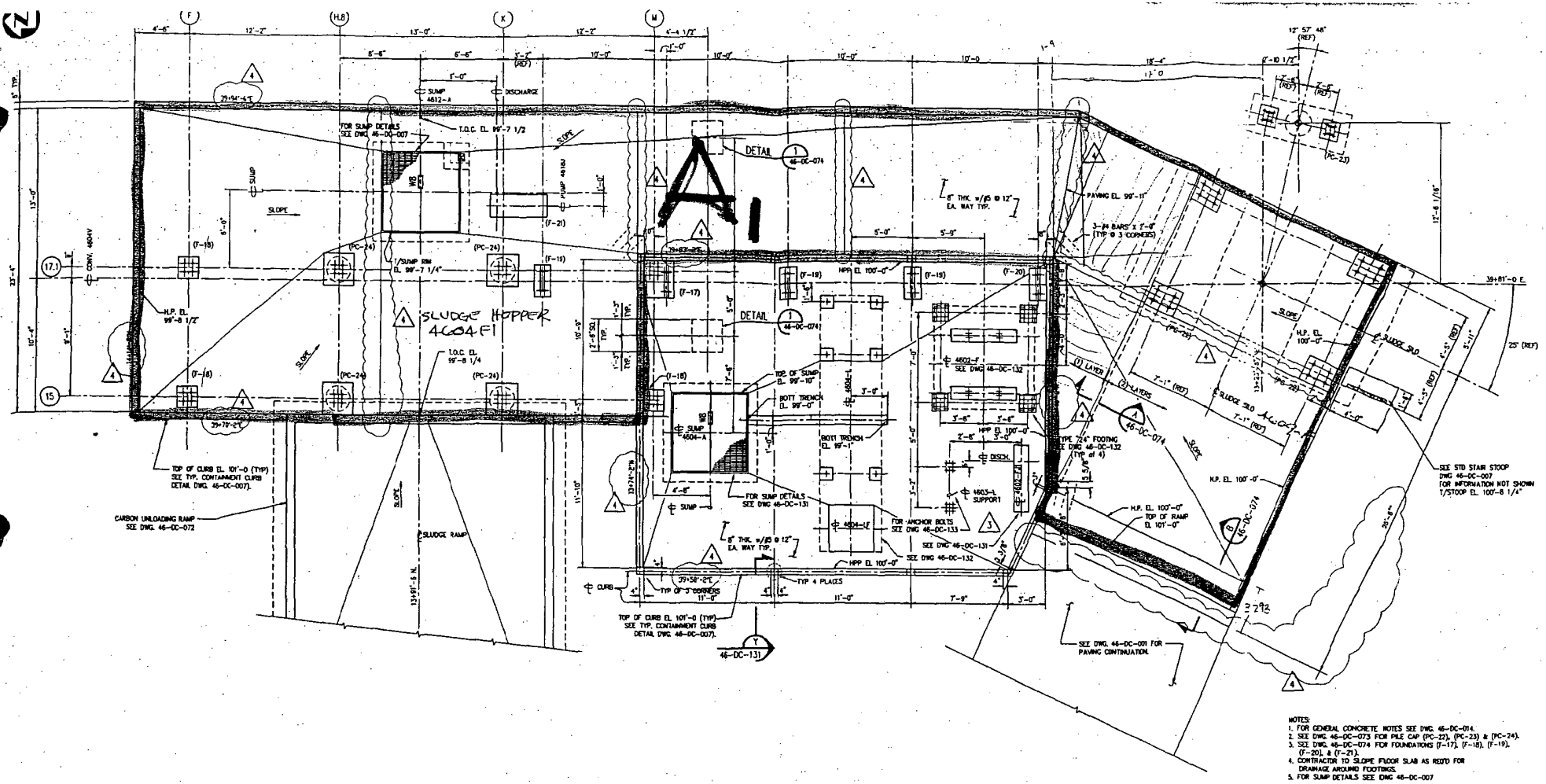
ENGR RECORD	BY	DATE
DRAWN		
CHECKED		
ELEC. CHECK		
INST. CHECK		
MECH. CHECK		
PIPING CHECK		
STRUCT. CHECK	GB	5-8-90
SQUAD LEADER	TGF	5-8-90
CHIEF ENG./DES.	MC	5-10-90
PROJ ENG./MGR.	JPB	5-8-90
APPROVED		
APPROVED		

NO.	DATE	DESCRIPTION
A	5-30-90	ISSUED FOR DESIGN

MULTIPURPOSE INCINERATION SYSTEM
CONCRETE
STANDARD SUMP AND MISC.
SECTIONS AND DETAILS

DRAWN BY	C. WILSON	DESIGNED BY	D. FLEMING	APPROVED BY	
DATE	5-4-90	DATE	5-11-90	DATE	
SCALE	NONE	PROJECT / WO. NO.	51651	DRAWING NO.	46-DC-007
JOB NO.	46				REV. NO. 1

AREA 700



NOTES:
1. FOR GENERAL CONCRETE NOTES SEE DWG. 46-DC-014.
2. SEE DWG. 46-DC-073 FOR PILE CAP (PC-22), (PC-23) & (PC-24).
3. SEE DWG. 46-DC-074 FOR FOUNDATIONS (F-17), (F-18), (F-19), (F-20), & (F-21).
4. CONTRACTOR TO SLOPE FLOOR SLAB AS REQ'D FOR DRAINAGE AROUND FOOTINGS.
5. FOR SUMP DETAILS SEE DWG 46-DC-007

Ford, Bacon & Davis, Incorporated
ENGINEERS–CONSTRUCTORS
SALT LAKE CITY, UTAH 18050428 DSF

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ST. GABRIEL LOUISIAN

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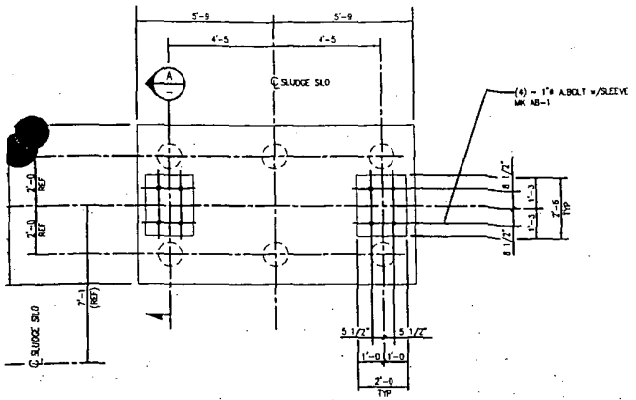
MULTIPURPOSE INCINERATION SYST
CONCRETE
SLUDGE AREA FOUNDATION LOCATI
PLAN

ENGR RECORD	BY	DATE
DRAWN	DSF	2-8-91
CHECKED	JA	FEB. 91
ELEC CHECK		
INST CHECK		
MECH CHECK		
PIPING CHECK		
STRUCT CHECK	GB	3-15-91
SQUAD LEADER	DSF	MAR 91
CHIEF ENG/DES	MG	3-15-91
PROJ ENG/MGR	DW	3-15-91

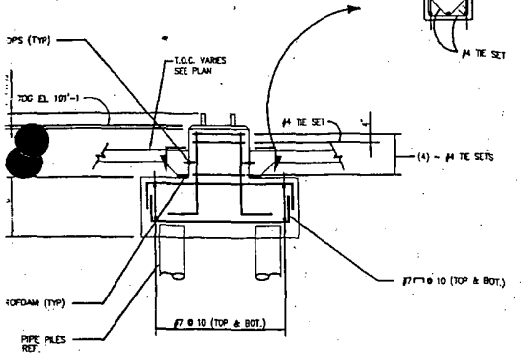
REFERENCE		
	46-DC-007	TYP. COL. GROUNDING DET.
	46-DC-001	PAVING PLAN
	46-DPP-001	PLOT PLAN

4	12-13-83	AS-BUILTS	51651	ELW				MC	
3	12-04-92	CHANGE 4602-FJT FDN.	52051-009	MAD					
2	09-25-92	ADD BELT PRESS FDN'S & PAVING	52051-009	MAD	TP	TP	FS		
1	4-19-91	CHANGED DIMENSION	51651	DST	DSF				
0	3-15-91	APPROVED FOR CONSTRUCTION	51651	DST	JA	DP	MCVT		
B	3-13-91	ISSUED FOR FINAL REVIEW	51651	DST	JA				
A	2-18-91	ISSUED FOR DESIGN	51651	DSF	JA				

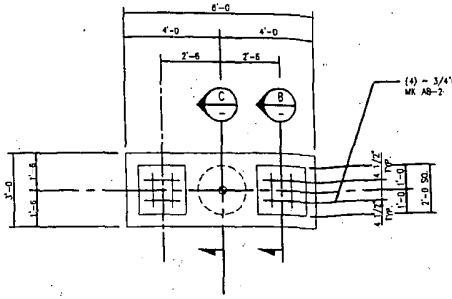
DRAWN BY	D. FLEMING	CHECKED BY	ANGELI	APPROVED BY
DATE	2-8-91	DATE	3-13-91	DATE
SCALE	1/4" = 1'-0	PROJECT / WO. NO.		DRAWING NO.



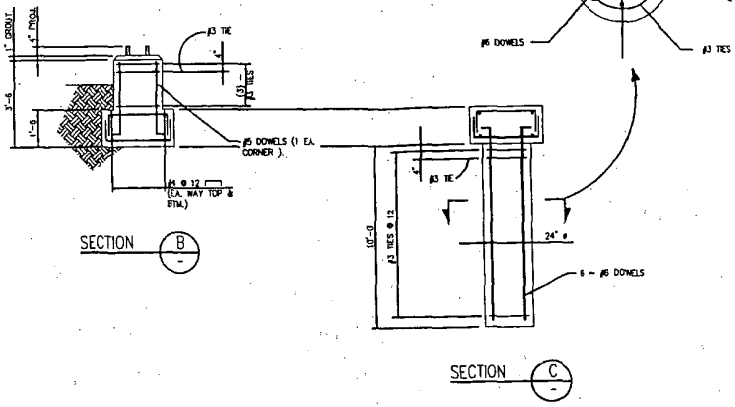
PLAN
FOUNDATION DETAIL (PC-22)
(2 ~ REQ'D)



SECTION A

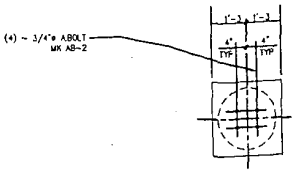


PLAN
FOUNDATION DETAIL (PC-23)

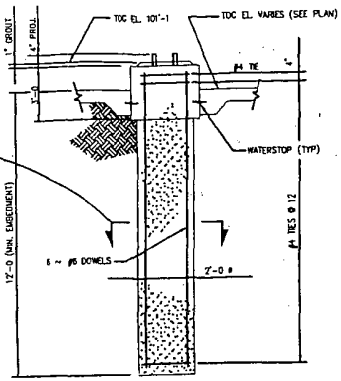


SECTION B

SECTION C



PLAN
FOUNDATION DETAIL (PC-24)



SECTION

NOTES:
1. FOR GENERAL CONCRETE NOTES SEE DWG. 46-DC-014.
2. SEE DWG. 46-DC-007 FOR TYP. COLUMN GROUNDING DETAILS.
3. SEE DWG. 46-DC-071 FOR FOUNDATION LOCATION PLAN.
4. SEE DWG 46-DC-074 FOR ANCHOR BOLT SCHEDULE.

ENGR RECORD	BY	DATE
DRAWN	DSF	FEB. 91
CHECKED	JA	MAR 91
ELEC. CHECK		
INST. CHECK		
MECH. CHECK		
PIPING CHECK		
STRUCT. CHECK	GB	MAR 91
SQUAD LEADER	DSF	MAR 91
CHIEF / ENG/GES	MC	MAR 91
PROJ. ENG/MGR	DW	3-25-91
APPROVED		

46-DC-071	SLUDGE AREA FOUNDATION LOCATION PLAN	.0	3-15-91	APPROVED FOR CONSTRUCTION	51651	DSF	JA	DW	MC	
		-A	3-13-91	ISSUED FOR DESIGN	51651	DSF	JA			

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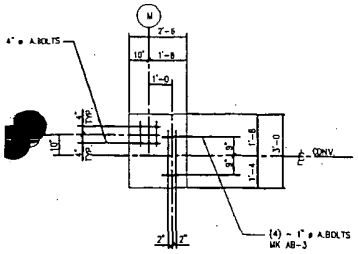
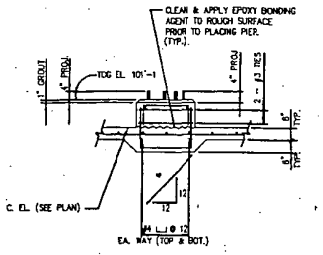
CONCRETE
SLUDGE AREA FOUNDATIONS
FOUNDATION DETAILS

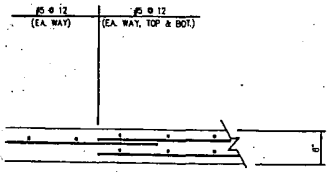
DRAWN BY	D. FLEMING	CHECKED BY	ANGELI	APPROVED BY
DATE	2-13-91	DATE	MAR 91	DATE
SCALE 3/8" = 1'-0	PROJECT / WA. NO. 51651	DRAWING NO. 46-DC-073		



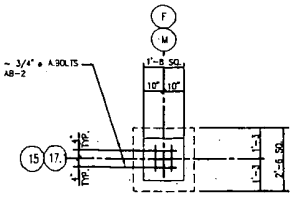
PLAN
FOUNDATION DETAIL (F-17)



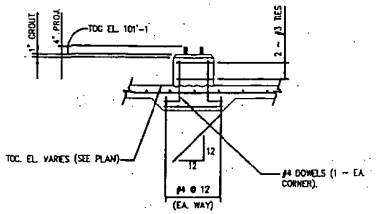
SECTION



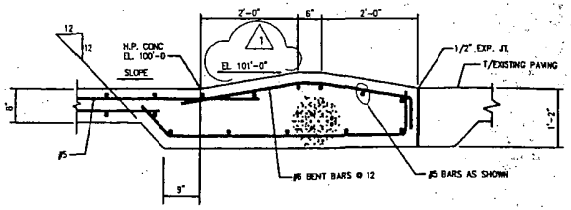
SECTION A
46-DC-071



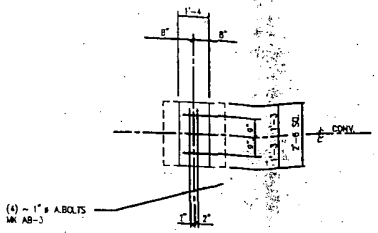
PLAN
FOUNDATION DETAIL (F-18)
(3 ~ REQ'D)



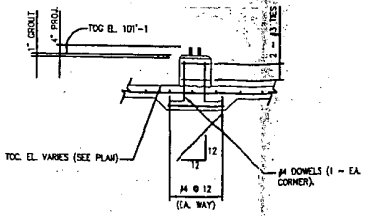
SECTION



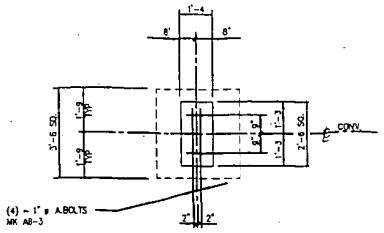
SECTION B
46-DC-071



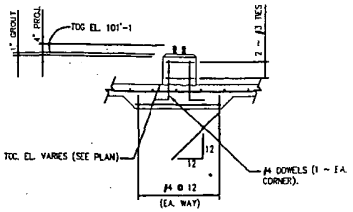
PLAN
FOUNDATION DETAIL (F-19)
(3 ~ REQ'D)



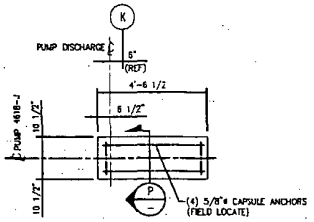
SECTION



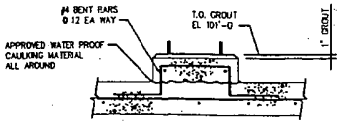
PLAN
FOUNDATION DETAIL (F-20)



SECTION

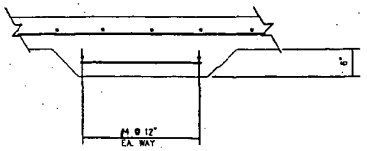


FOUNDATION PLAN (F-21)
SEE DWG 46-DC-071 FOR LOCATION

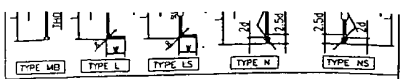


SECTION P
NTS

NOTE: CLEAN & APPLY EPOXY BONDING AGENT TO ROUGH SURFACE PRIOR TO PLACING PIER



DETAIL 1
46-DC-071



NOTES:
1. ANCHOR BOLTS TO BE CARBON STEEL AND SHALL CONFORM TO A.S.T.M. A-307 W/STD NUMBER THREADS, CLASS 2 FIT AND HVY HEX NUTS.
2. ALL SLEEVES TO BE WILSON MOLDED POLYETHYLENE PLASTIC UNLESS NOTED.
3. TAG ALL ANCHOR BOLTS WITH MARK NUMBER AND DRAWING NUMBER.

ANCHOR BOLTS								SLEEVES		
MARK	QTY	TYPE	LENGTH	d	W	R	THD	NUTS	SIZE	LENGTH	REMARKS
AB-1	16	MS	2'-6"	1"	-	-	3"	16	2"ø	7"	A-325
AB-2	40	N	1'-9	0"	-	-	3"	40	-	-	
AB-3	20	N	1'-9	1"	-	-	3"	20			

NOTES:
1. FOR GENERAL CONCRETE NOTES SEE DWG. 46-DC-014.
2. SEE DWG. 46-DC-007 FOR TYP. COLUMN GROUNDING DETAILS.
3. SEE DWG. 46-DC-071 FOR SLUDGE AREA FOUNDATION PLAN.

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ENGINEERS-CONSTRUCTORS
SALT LAKE CITY, UTAH 18050.44C DSF

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MULTIPURPOSE INCINERATION SYSTEM
CONCRETE
SLUDGE AREA FOUNDATIONS
FOUNDATION DETAILS

ENGR RECORD	BY	DATE
DRAWN	DSF	FEB 91
CHECKED	JA	MAR 91
ELEC CHECK		
INST CHECK		
MECH CHECK		
PIPING CHECK		
STRUCT CHECK	GB	3-15-91
SQUAD LEADER	DSF	MAR 91
CHIEF ENG/DES	MC	3-15-91

CHANGE											
1		1-28-91	REVISED ELEVATION	51651	DF	DSF	JA	DW	MCVT		
0		2-15-91	APPROVED FOR CONSTRUCTION	51651	DST	JA	DW	MCVT			

DRAWN BY	D. FLEMING	ANGELI	MCVT
DATE	2-13-91	MAR 91	3-25-91

Appendix E

Hydrogeologic Framework of Area

Hydrogeologic Framework

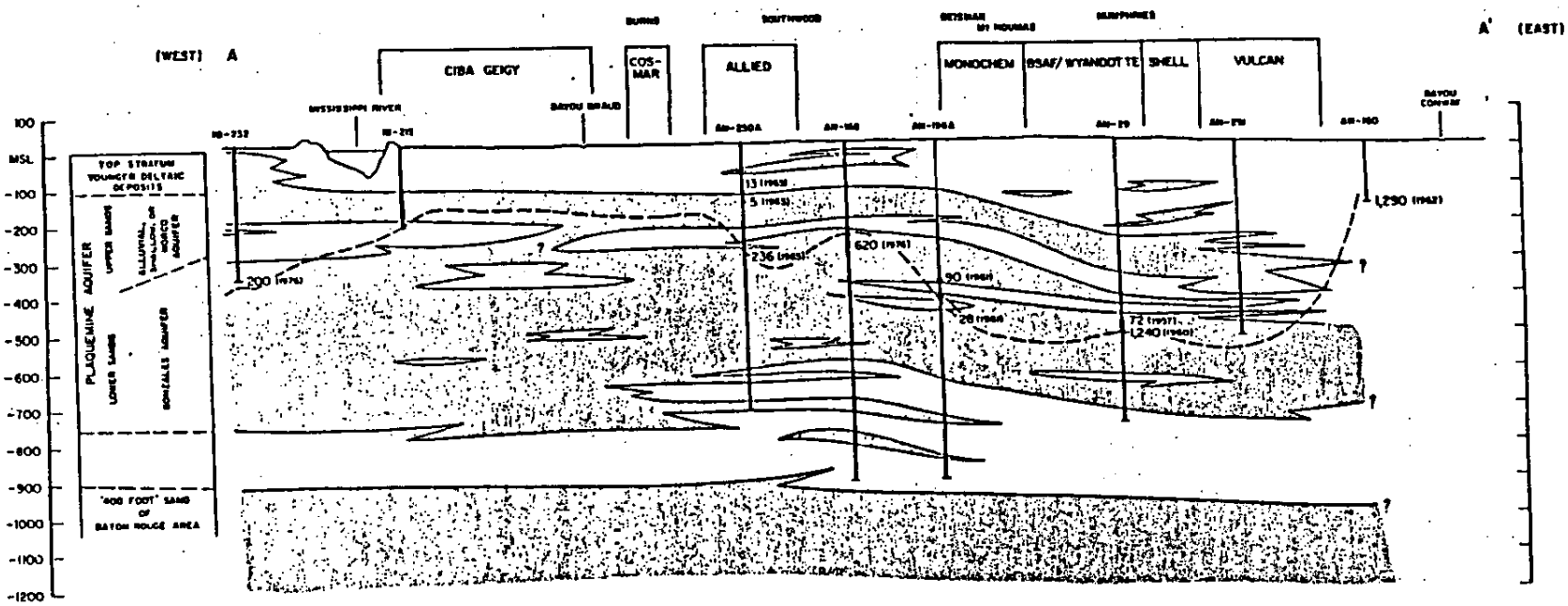
The hydrogeology of the study area in Ascension and Iberville Parishes has been described by Long (1965) and Whiteman (1972). The area along the eastern edge of the meander belt of the Mississippi River is a growing deltaic plain. Natural levees, which were formed during periods of overbank flooding, slope from the river's edge and grade into backswamp deposits at lower elevations. The deposition of sand, silt and clay forms the top stratum of the younger deltaic deposits with point-bar deposits within bends of the river channel. The top stratum consists of relatively impermeable silt and clay to depths of about 75 to 125 ft below land surface which confines ground water in the sands below. The point-bar deposits, however, consist largely of fine sand which are more permeable and provide hydraulic continuity between the river and adjacent aquifers.

The top stratum is underlain by older deltaic deposits and alluvium to depths of 800 to 1,000 ft within the Pleistocene channel of the Mississippi River. The deposits consist of interbedded clay, sand and gravel layers. The sand and gravel stratigraphic units form the area's principal aquifers. The lower part of the alluvial channel fill is relatively coarse-grained and may be hydraulically continuous with the underlying older sands to depths of about 600 to 700 ft below land surface. However, the contact between the alluvium and the older deltaic deposits

is uncertain. The Plaquemine Aquifer, consisting of alluvial deposits, is the principal aquifer in Iberville Parish. However, in most of the study area the alluvial deposits which extends eastward beyond the limits of the river channel are of relatively minor importance, and the principal aquifers occur in the older deltaic deposits. Commonly, two aquifers can be distinguished in the older deltaic deposits in areas of extensively interbedded clays: (1) the Shallow Norco Aquifer and (2) the deeper Gonzales Aquifer (also known as the Gonzales-New Orleans Aquifer or "700-foot" sand).

The Plaquemine Aquifer and aquifers in the alluvial and older deltaic deposits apparently form an interconnected artesian aquifer system, at depths of about 150 to 700 ft, as evidenced by potentiometric pressures and water-level fluctuations. The deposits below a depth of about 700 ft are mostly clays containing several sand layers that correlate with the "400-600-foot" aquifer system of the Baton Rouge area.

A northwest-southeast hydrogeologic section of the uppermost 1,000 ft of sediments underlying the Geismar area, as shown in Exhibit 8, illustrates the relative positions of the aquifers and confining beds. Also, the approximate location of the fresh water/saline water interface is shown. The hydrogeologic section is graphically located on the water well location map (see Exhibit 3).



EXPLANATION

- Well number, Iberville or Ascension Parish
- Well symbol
- 200 (1976) — Chloride concentration, in mg/l, and date
- Clay and shale
- Sand and gravel
- Approximate location of Fresh/Salt Water Interface (250 isochlor line)

Note: See Exhibit 3 for location of section

GEISMAR INDUSTRIES TECHNICAL GROUP
REGIONAL STUDY FOR
HAZARDOUS WASTE FACILITIES PERMIT APPLICATION

EXHIBIT 8. HYDROGEOLOGIC SECTION SHOWING PRINCIPAL AQUIFERS AND VERTICAL DISTRIBUTION OF FRESH AND SALTY WATER.

LOUISIANA
MARCH 1980

GERAGHTY & MILLER, INC
Water Resources Consultants

Although some large normal faults have been mapped in the deep subsurface in connection with exploration for oil and gas, displacement along these faults generally decreases upward. In the comparatively shallow stratigraphic units in which fresh water occurs, the presence of faults cannot be detected owing to the natural variability in thickness and lithology and the discontinuous nature of the individual layers of clay, silt and sand.

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